

World War.

(Technology)

(Worlds Fair)

(20.00)



R E P O R T

OF

THE COMMISSIONER-GENERAL FOR THE UNITED STATES

TO THE

INTERNATIONAL UNIVERSAL EXPOSITION,
PARIS, 1900.

VOLUME VI.

FEBRUARY 28, 1901.—Read, referred to the Committee on Printing,
and ordered to be printed.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1901.

CONTENTS.

	Page.
Report of the Director of International Congresses.....	7-14
Reports of Delegates from the United States to International Congresses ...	15-352
Appendix I.—Names of United States citizens decorated by the French Government	353-354
Appendix II.—Names and addresses of United States exhibitors receiving awards in horticultural and arborcultural competitions.....	355-375
Appendix III.—Recapitulation of indexes to Vols. I, II, III, IV, V, and VI, including index to Catalogue, Vol. IV	377-502



10. LOOKING WEST ON RIVER SEINE FROM ALMA BRIDGE.

INDEX TO ILLUSTRATIONS, VOLUME VI.

[Indexes of all volumes and all illustrations will be found at the end of Volume VI.]

	Page.
Agriculture, view of façade.....	58
Educational exhibit:	
Façade of United States section.....	28
Palace of varied industries.....	18
Pedagogy section.....	168
University exhibit.....	46
View of entrance to.....	10
Education:	
Archæological explorations, exhibit of.....	124
England's exhibit in university section.....	66
Higher, view of installation.....	90
Primary section, French exhibit, city of Paris building.....	150
Secondary, drawings.....	142
Secondary, view of installation.....	160
Superior, view of installation.....	98
Fine arts, view of installation.....	358
Forestry and fisheries, view of installation.....	230
Furniture and decorations, varied industries section.....	332
Furniture exhibit, varied industries section.....	312
Iron and steel exhibit, mining and metallurgy section.....	298
Liberal arts, view of entrance to façade.....	208
Locomotive exhibit in railroad building.....	266
Machinery exhibit in United States machinery annex, bois de Vincennes....	278, 290
Machinery palace, general view in.....	82
Machinery section, exhibit of conveying belt.....	344
Naval exhibit of the United States:	
Model battle ships.....	250
Models of cruisers and gunboats.....	196
View of installation.....	240
New York Times composing room, publishers' building, view of installation.....	134
Pollock prize exhibit, plan of installation of.....	186
Publishers' building:	
View of interior.....	74
View of exterior.....	116
Seine River, the, looking west from Alma Bridge.....	4
Sousa and his band in the Esplanade des Invalides.....	350
United States Geological Society, headquarters of, in mining and metallurgy space.....	218
United States national pavilion, view of a room in.....	106
United States post-office exhibit, models showing methods of transportation of mails.....	36
Varied industries section:	
East aisle.....	322
Façade.....	176

REPORT OF THE DIRECTOR OF THE ORGANIZATION
OF INTERNATIONAL CONGRESSES.

J. H. GORE, DIRECTOR.

PART I.

REPORT OF THE DIRECTOR OF INTERNATIONAL CONGRESSES.

The success of the congresses at the exposition of 1889, accentuated by the interest taken in the many parliaments and meetings held during the World's Columbian Exposition at Chicago, 1893, firmly established this feature of international expositions. It is admittedly appropriate that such meetings should be held under such auspices and at such a time. The city acting as host is visited by those who would naturally attend the congresses, and the exhibits gathered together would, in a great measure, serve as illustrative material for the topics discussed.

If the range of subjects is sufficiently broad and judiciously chosen, the congresses can constitute a most valuable adjunct by treating from an academic standpoint those problems and questions that are wrought out by the brain and brawn of the exhibitor. The two parts are complementary, and if the exhibitor would attend the appropriate congress and the members of the congress inspect the correlative exhibits, all would be immensely benefited and the Exposition would transcend its purely industrial and commercial purposes. The officials of the Exposition showed their appreciation of the possibilities of the congresses by the early appointment to the office of principal delegate of Monsieur Gariel.

He at once took up the organization of local committees for those congresses that were called for this single meeting and aided the permanent congresses that were meeting in Paris because of the exposition, to make preparations for their sessions. It was a difficult task to so arrange a schedule as to place related congresses near the same date and, at the same time to avoid the conflicting of those that might under favorable conditions be attended by the same persons.

A hall of congresses was erected on the banks of the Seine, just within the Pont de l'Alma Gate, for the meeting place of the smaller congresses. This, as had been expected, had its disadvantages as well as its conveniences. The attractions of the Exposition were so near at hand that many persons who left the hall for a few minutes found themselves tempted to tarry outside, thereby decreasing to a considerable degree the attendance.

The authorities further showed their interest in the congresses and emphasized their relation to the Exposition by prescribing that all congresses that held sessions within the Exposition inclosure, and a few others as well, should have their official delegates appointed by the Commissioners-General. Each country was invited to send two or more official delegates, to be designated as indicated. Since the congresses were powerless to initiate any movement, these delegates could in nowise bind their governments nor commit them to any particular line of action. They were, however, accorded special consideration, and from their number the officers were chosen. The congresses organized were as follows:

Name of congress.	Name and address of secretary.
Accidents of labor and workingmen	Mr. Gruner, Louis-le Grand, 20.
Insurance	
Acetylene	Mr. Daix, Louis-Blanc, 72.
Actuaries	Mr. Marie, Jouffroy, 32.
Aeronautics	Mr. Triboulet, de la Pepiniere.
Agriculture	Mr. Sagnier, de Rennes, 106.
Agricultural experiment stations	Mr. Grandeau, avenue de l'Opera, 5.
Agricultural societies	Mr. Milcent, 8 rue d'Athenes.
Alliance, cooperative	Mr. Mabillean, 5 rue Las-Cases.
Alpinists	Mr. Cuenot, Vanquelin, 13.
Americanists	Mr. Froidevaux, Notre-Dame-des Champs, 12.
Animals, rational feeding of	Mr. Mallevre, 10 rue Claude-Bernard.
Anthropology and prehistoric archaeology	Mr. Verneau, Broca, 148.
Anti-slavery	Mr. Lefevre-Pontalis, des Mathurins, 5.
Apprenticeship, patronage of	Mr. Griffaton, 5 rue Coetlogon.
Arboriculture and pomology	Mr. Nombrot, Bourg-la Reine, (Seine).
Architecture	Mr. Poupinel, Boissy-d'Anglas, 45.
Architecture, naval	Mr. Hauser, 4 rue Meissonier.
Automobilism	Count Chasseloup-Laubat, avenue Kleber, 51.
Bakery	Mr. Bouchet, 53 rue de Clery.
Basque studies	Mr. L. d'Abartigue, de Rivoli, 228.
Bee culture	Mr. Caillais, 33 rue du Docteur-Blanche.
Beverage-yielding fruits	Mr. Jourdain, 241 rue Saint-Jacques.
Bibliography	Mr. Moch, avenue de la Grande-Armee, 16.
Blind, amelioration of the condition of	Mr. de la Sizeranne, avenue de Breteuil, 31.
Botany	Mr. Perrot, boulevard Raspail, 272.
Charities	Dr. Thulie, 37 boulevard Beausjour.
Cheap dwellings	Mr. Challamel, 7 rue Rouget-de-Lisle.
Chemistry	Mr. Bertrand, boulevard Voltaire, 188.
Chemistry, applied	Mr. Dupont, rue de Dunkerque, 52.
Chronometry	Mr. Rollet, 13 rue de l'Universite.
Colonial	Mr. Guy, 86 avenue de Wagram.
Colonial sociology	Mr. Leseur, boulevard Raspail, 4.
Commerce and industry	Mr. J. Hayem, 63 avenue de Villiers.
Commercial travelers	Mr. Jamet, 1 rue du Lunain.
Consumers, cooperative societies of	Mr. Tutin, 5 rue des Cinq-Arches Suresnes.
Customs, regulations of	Mr. Schloss, 59 rue de Prony.
Deaf mutes	Dr. Martha, 32 rue Fortuny.
Dental	Dr. Sauvez, 17 rue de St. Petersbourg.
Dermatology and syphilography	Dr. Thibierge, 7 rue de Surenne.
Drawing	Mrs. Chatrousse, 117 boulevard Saint-Germain.
Education, agricultural	Mr. de Lagorsse, avenue de l'Opera, 5.
Education, physical	Mr. Demeny, 95 avenue de Versailles.
Education, popular	Mr. Robelin, Longjumeau (Seine et Oise).
Education, primary	Mr. Trautner, 20 rue Etienne-Marcel.
Education, secondary	Mr. H. Berenger, 8 rue Froidevaux.
Education, social	Mrs. Lamperiere, 37 rue Vaneau.
Education, superior	Mr. Larnaud, The Sorbonne.
Education, technical, commercial, and industrial	Mr. Lagrave, 74 rue de l'Universite.
Electricity	Mr. P. Janet, 14 rue de Stael.
Electrology and radiology	Mr. Doumer, 57 rue Nicolas-Leblanc.
Ethnology	Mr. G. Raynaud, 82 rue Mouffetard.
Fencing	Mr. de la Fremoire, 81 rue Jouffroy.
Firemen	Mr. Guesnet, 215 Bourse de Commerce.
Fishery	Mr. Perard, 42 rue Saint Jacques.
Folk-lore	Mr. Sebillot, 80 boulevard Saint Marcel.
Forestry	Mr. Cherlemagne, 15 rue Faraday.
Gas	Mr. Delahaye, 65 rue de Provence.
Geography, economic and commercial	Mr. Foucart, 8 rue de Tournon.
Geology	Mr. Ch. Barrios, 62 boulevard Saint-Michel.
Grocery	Mr. Laigneau, 150 rue de Belleville.
History, comparative	Mr. LeGlay, 59 avenue Kleber.

Name of congress.	Name and address of secretary.
History of religions	Mr. Marillier, 7 rue Michelet.
Homoeopathy	Dr. Leon Simon, 24 place Vendome.
Horticulture	Mr. Bergman, 4 boulevard de l'Onest, Le Rainey.
Hygiene	Dr. A. J. Martin, 21 rue de l'Ecole de Medecine.
Hypnotism	Dr. Berillon, 14 rue Taitbout.
Inventors	Mr. D. A. Casalonga, 15 rue des Halles.
Laborers in time of war, aid to	Mr. de Gosselin, 120 Faubourg Saint Honore.
Law, comparative	Mr. Daguin, 29 rue de l'Universite.
Law, maritime	Mr. Autran, 2 rue de l'Ormeau, Marseille.
Librarians	Mr. Henri Martin, 1 rue Sully.
Life saving	Mr. Cocheris, 13 rue de Savoie.
Mathematics	Mr. Laisant, 162 avenue Victor Hugo.
Mechanics, applied	Mr. G. Richard, 44 rue de Rennes.
Medicine	Dr. Chauffard, 21 rue de l'Ecole de Medecine.
Merchant marine	Mr. Dal Piaz, 6 rue Auber.
Medicine, professional and deontology	Dr. Grover, 21 rue du Faubourg-Poissonniere.
Meteorology	Mr. Angot, 12 avenue de l'Alma.
Milling	Mr. Cornu, 6 place du Louvre.
Mines and metallurgy	Mr. Gruner, 55 rue de Chateaudun.
Modern languages, the teaching of	Mr. Deniker, 8 rue Buffon.
Music	Baudouin La Londe, rue Gounod, 11.
Mutuality	Mr. Arboux, 78 rue Bonaparte.
Navigation	Mr. Pavie, rue du Faubourg Saint-Honoré, 72.
Numismatics	Mr. Blanchet, 164 boulevard Pereire.
Ornithology	Mr. de Claybrooke, 5 rue de Sontay.
Peace	Mr. Gaston Moch, 6 rue Favart.
Penmanship	Mr. Varinard, 8 rue Servandoni.
Pharmacy	Mr. Crinon, 45 rue de Turenne.
Pharmaceutical specialties	Dr. Leprince, 24 rue Singer.
Philosophy	Mr. Xavier Leon, 39 rue des Mathurins.
Photography	Mr. Pector, 9 rue Lincoln.
Physics	Mr. L. Poincare, 105 bis boulevard Raspail.
Popular credit	Mr. Dufourmantelle, 95 avenue Kleber.
Press, educational	Mr. Dubuequoy, 26 rue de Naples.
Press, medical	Dr. Blondel, 8 rue de Castellane.
Prisoners' aid	Mr. Louiche-Desfontaines, 31 rue Washington.
Profit sharing	Mr. Trombert, 182 Faubourg Saint-Denis.
Property, bonded	Mr. Besson, Ministry of Finance.
Property, industrial	Mr. Thirion, 95 boulevard Beaumarchais.
Property, literary and artistic	Mr. Lermina, 19 boulevard de Port-Royal.
Property, personal	Mr. Salefranque, 24 place Malesherbes.
Property, real (buildings)	Mr. Morgues, 7 rue Scribe.
Psychology	Dr. Janet, 21 rue Barbet-de-Jouy.
Railways	Mr. Weissenbruck, 11 rue de Louvain, Bruxelles.
Rumie	Mr. P. Marcou, 69 avenue de la Grande Armée.
Social science, instruction in	Mr. Dick May, 22 rue Victor Masse.
Steam engines, supervision and testing of	Mr. Compere, 66 rue de Rome.
Stenography	Mr. Depoin, 150 boulevard Saint-Germain.
Stock companies	Mr. Rosseau, 105 rue Saint-Lazare.
Sunday rest	Mr. David, 15 rue du Mont-Thabor.
Testing materials of construction	Mr. Debray, 41 avenue Kleber.
Theatrical art	Mr. Charbonnel, 168 rue de Grenelle.
Thread numbering	Mr. Fleury, 9 rue d'Uzes.
Tobacco, against abuse of	Dr. G. Petit, 51 rue du Rocher.
Tramways	Mr. Nonnenberg, 35 rue Potagère, Brussels.
Unification of gold and silver in the arts	Mr. Debain, 79 rue du Temple.
Vegetarian	Mr. G. de Fontenay, 10 rue Clément-Marrot.
Viticulture	Mr. Gervais, 25 rue de Rivoli.
Wine, spirit, and liquor	Mr. Dubosc, 9 rue Saint-Martin.
Women, condition and rights of	Mrs. Durand, 14 rue Saint-Georges.
Women, work and institutions of	Mrs. Pegard, 24 rue Dronot.
Workingmen, legal protection of	Mr. Jay, Rond-Point de la Porte Maillot.
Workingmen's cooperative unions	Mr. Vila, 27 boulevard Saint-Martin.

The congresses were given official recognition by the Government in the ratification of the following regulations:

REGULATIONS FOR CONGRESSES AT THE EXPOSITION OF 1900.

[Ministerial decree of June 11, 1898.]

ARTICLE 1.

A series of international congresses is hereby instituted for the time of the Universal Exposition of 1900; their organization and working are subject to the present regulations.

ARTICLE 2.

The international congresses of the Exposition of 1900 are divided into twelve sections, according to the following list:

- SEC. I. Education and teaching.
- SEC. II. Fine arts, decorative arts, belles-lettres, dramatic art, history, archæology.
- SEC. III. Mathematical sciences (mathematics, mechanics, astronomy, geodesy).
- SEC. IV. Physical and chemical sciences and their applications (physics, chemistry, meteorology, physical and chemical industries).
- SEC. V. Natural sciences (geology, mineralogy, botany, zoology, anatomy, physiology, anthropology).
- SEC. VI. Medical and pharmaceutical sciences.
- SEC. VII. Applied mechanics, civil and naval engineering, means of transportation.
- SEC. VIII. Agricultural sciences (agronomy, agriculture, viticulture, agricultural industries, horticulture, forestry, hunting and fishing).
- SEC. IX. Political economy, legislation, statistics.
- SEC. X. Social sciences (social economy, hygiene, charities).
- SEC. XI. Colonization and geographical sciences (geography, physical geography, exploration).
- SEC. XII. General industry (arts and manufactures) and commerce.

ARTICLE 3.

The international congresses of the Exposition of 1900 are placed under the patronage of the French Government. Such patronage in no wise commits the administration either to opinions that may be uttered or to resolutions that are adopted. Religious and political subjects are formally prohibited.

ARTICLE 4.

The general supervision of the congress halls appertains to the administration of the Exposition.

ARTICLE 5.

All communications relating to congresses of the Exposition of 1900 should be addressed to the Commissaire-Général (Direction Générale de l'Exploitation—Congrès).

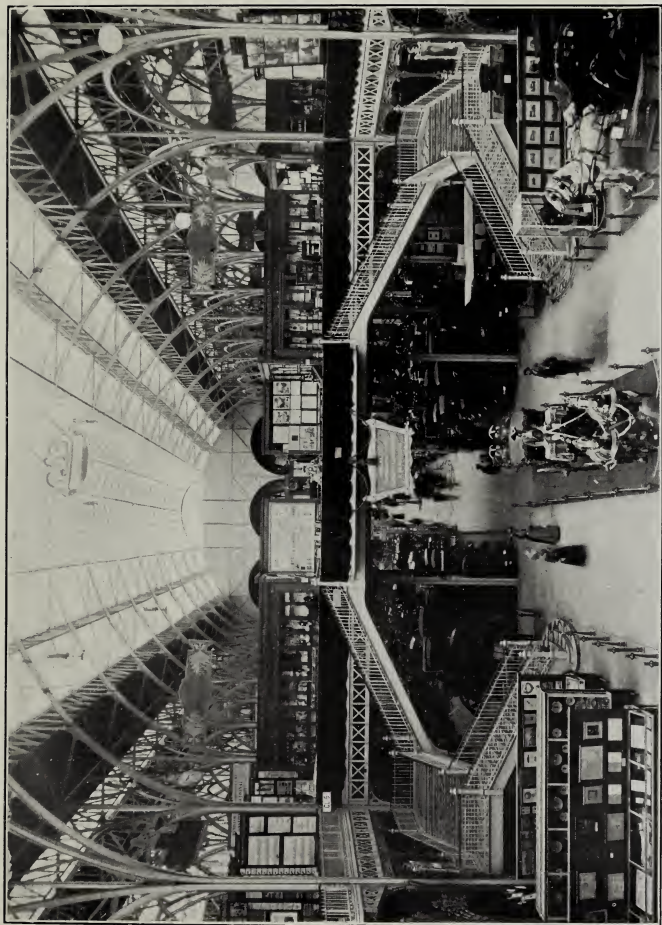
ARTICLE 6.

Questions relating to applications for international congresses and to their organization are intrusted to twelve special committees corresponding to the sections enumerated in article 2. The members of these committees are named by the minister of commerce, industry, post and telegraphs, on being proposed by the Commissioner-General. Each of these committees elects a president, vice-president, and secretary, chosen among its members.

ARTICLE 7.

A higher commission, in concert with the directeur-général de l'exploitation, has charge of the organization and direction of the congresses as well as of the examination of propositions made by the committees. This commission comprises:

1. A president and three vice-presidents named by the minister of commerce, industry, posts and telegraphs, on being proposed by the Commissioner-General, outside of members of the committees instituted by the preceding article.
2. The president and vice-presidents of said committees.
3. The delegates in chief for the organization of congresses.
4. A reporter and secretary appointed by the Commissioner-General.



ENTRANCE TO FRENCH EDUCATIONAL EXHIBIT, CHAMP DE MARS. EXHIBIT LOCATED IN GALLERY.

ARTICLE 8.

The higher commission is charged with drawing up the instructions necessary to the application of the present regulations.

ARTICLE 9.

Any difficulty not foreseen by the present regulations is subject to the higher commission, which will decide in the matter.

ARTICLE 10.

The members of the higher commission have free admission to all the congresses. They can take part in the deliberations of a congress only as members thereof.

ARTICLE 11.

All applications for the inscription of a congress on the official list should indicate the general programme of the congress and the end proposed by it.

They should also give the names of the promoters of the congress and mention explicitly whether or not it continues more or less directly former congresses.

ARTICLE 12.

The special committees receive the applications and programmes of congresses from the administration. After being examined by the committees these applications and programmes are submitted to the examination of the higher commission, which proposes their admission or rejection subject to the approbation of the Commissioner-General.

ARTICLE 13.

Each committee, in the matter which concerns it, draws up a list of congresses which it considers might usefully be called together. This list is submitted by the Commissioner-General to the examination of the higher commission.

ARTICLE 14.

The International Congresses organize and govern themselves, in conformity with the general order and conditions laid down in the present regulations. For this purpose there is appointed for each congress a committee of organization, which has charge of the preparation of its work and represents it with the administration.

ARTICLE 15.

The committees of organization are named by the Commissioner-General on being proposed by the special committees and after consultation of the higher commission.

In the committee of organization places are reserved for the promoters of the congress.

ARTICLE 16.

Congresses which form a continuation of previous congresses may be authorized to enter into the series of International Congresses at the Exposition of 1900, while keeping in its entirety the organization which they already possess. They are represented with the administration by the committee of organization approved by the Commissioner-General.

ARTICLE 17.

The committees of organization should submit to the administration, at latest by October 1, 1899, the general programme of the deliberations of the congresses, a list of the subjects which are to form the matter of reports prepared beforehand, and the names of the reporters who have been chosen, the probable number of sessions, the time of the year proposed for the holding of the congress, and the place needed for the meetings.

ARTICLE 18.

Only the members of the congress, the delegates of branches of the French Government, and the delegates of foreign governments are allowed to present papers during session and to take part in the discussions and deliberations. They receive a personal card, which is delivered to them by the directeur general de l'exploitation on their being proposed by the special committees.

ARTICLE 19.

The higher commission takes upon itself and supervises the publication of summary reports of the proceedings of congresses. Such publications are at the expense of the administration.

ARTICLE 20.

With a view of the publication of these summary reports of proceedings, each committee of organization must transmit to the higher commission within a time which is to be fixed:

1. The summary of proceedings of the sessions.
2. The list of members who have taken part in the congresses.
3. The number of copies which it is desired should be delivered, either gratuitously or for a consideration.

ARTICLE 21.

Each committee of organization shall receive, as it may request, copies of the reports of the proceedings which relate to the congress it represents. The number which may be assigned gratuitously shall be at most 50 copies more than the number of actual members. Moreover, the committee shall have at its disposal as many more copies as may be necessary at a fixed price.

ARTICLE 22.

Each committee of organization shall transmit to the administration (of the Exposition) 50 copies of the full reports of proceedings which it may publish in connection with the congress it has organized.

As there was no fund available from which to pay even the travelling expenses of the delegates, it was not an easy task to find suitable persons who might attend. While many of the congresses were in session during the period when our jurors were in Paris, it was certain that they would be too closely occupied to discharge the duties of delegates.

A large number of letters like the following were sent out to the most distinguished specialists, which resulted eventually in the selection of nearly five hundred persons who declared their intention to attend the congresses and their willingness to prepare the reports

desired. As was to be expected, many persons were unable to attend the congress intended, and others for various reasons failed to report on the proceedings.

DEAR SIR: I beg leave to invite your attention to the international congress on (name given), which meets at Paris from (date), and to ask on behalf of the Commissioner-General if it is your expectation, as one interested in this subject, to be present. A favorable answer to this query would be of assistance in selecting delegates to be appointed to represent this Government.

It might be well in this connection to mention that this position does not carry with it any pecuniary benefits, but, as you can readily understand, is one of great honor. You may assist us still further in this important work by giving the names of specialists who, in your opinion, may contemplate visiting Paris this summer.

Very truly yours,

_____,
Director Department of Organization of International Congresses.

Each congress will eventually publish its proceedings. Therefore, in order to acquaint our people as intimately as possible with what may be found in these proceedings, it has been decided to give in this connection, in addition to such reports as we have from our delegates, outlines of the topics proposed for consideration, and, as far as possible, the titles of papers presented.

As the delegates presented themselves, formal credentials were given to each one and notification sent to the secretary of the appropriate congress and also to Mr. Gariel of the names and addresses of the delegates. In a few instances the delegates did not consider it essential to report their presence at the office of the Commission, and in such cases they failed to receive invitations and printed matter intended for them.

To all who were known to be in attendance the following letter was addressed:

DEAR SIR: It is the desire of the Commissioner-General to include in his report on the Paris Exposition of 1900 a synopsis of the proceedings of the more important international congresses held under the auspices of the Exposition.

It is suggested that the following points will be of special interest:

1. The names of all Americans in attendance and their participation in the programme.
2. A brief synopsis of the important addresses.
3. Any new departures or methods advocated.
4. The efforts made, or resolutions adopted, looking toward international organization, cooperation, or action of any kind.

This report should be forwarded to Commissioner-General Peck, Auditorium Building, Chicago, on or before December 1.

Very truly yours,

J. H. GORE,
Director Department of Organization of International Congresses.

PART II.

REPORTS OF THE DELEGATES FROM THE UNITED STATES TO THE INTERNATIONAL CONGRESSES.

REPORT ON THE CONGRESS OF ARBORICULTURE AND POMOLOGY.

By G. B. BRACKETT,

Expert in Horticulture for United States Commission to Paris Exposition of 1900.

The congress assembled in the social economy building of the Paris Exposition on the 13th of September, and was called to order at 9.30 a. m. by President Baltet. M. Jean Dupuy, minister of agriculture, was introduced and opened the session with an address of ten minutes in which he felicitated the members of the congress on the immense success of the horticultural department of the Exposition and upon the importance of arboriculture and horticulture as an industry.

M. A. Viger, president of the National Horticultural Society of France, congratulated the French growers on the great success of the several temporary competitions, and noted that they grew better and more interesting as the season of fruits advanced. He said their effect was not temporary, but educational and permanent. He noted the programme of the congress in detail with general felicitations.

M. Charles Baltet, president of the congress, replied in a few well-chosen remarks upon the importance of a careful consideration of the questions before the congress. The temporary officers were made permanent and the names of vice-presidents announced.

The roll of delegates was called. Prof. W. B. Alwood, of the Polytechnique Institute of Virginia, and G. B. Brackett, Pomologist of the Department of Agriculture, were the only Americans present. The latter was made vice-president for the United States.

The programme was taken up and papers read in regular order.

I. QUESTION: FRUIT FARMS—CONDITIONS, CULTURE, AND ECONOMICS.

The most important item in the discussion was on the best varieties for cultivation. Primary instruction in horticulture and the study of varietal forms. Cited work in the United States and Canada, and noted varieties of apples most employed in America, not well known in France. Many varieties of pears were of French origin. Usage of Japanese varieties of prunes was mentioned. The conditions of transportation and sale and the conservation by cold storage were important factors. The United States and Canada were cited.

II. THE PLANTING OF FRUIT TREES ALONG THE HIGHWAYS.

Under the distance of planting of fruit trees, about 30 feet for ordinary apple trees was recommended; high heads were thought better than low ones, but on steep places trees are easily blown over. The road tender (*inspecteur de route*) cares for the trees and sells the fruit. The fruit is often stolen. It was suggested that if only varieties for cider and distillation were grown there would be less loss from stealing. There was some discussion upon the injury to adjacent property by the entrance of the roots of the forest trees. President Viger said alongside of his property the roots extended 20 meters into his premises and injured his culture. He also suggested opposition to fruit planting on the score of interference with private industry by Government sale of fruit. It was voted to recommend the substitution of fruit-tree planting for forest-tree planting along roadside. Also to appoint a committee to recommend species of fruit and varieties. This committee consisted of M. Baltet and others. M. Viger discussed the duties of the committee and mentioned nurseries conducted by the administration and opposed it as interference with private business. Voted to recommend the purchase of trees from private nurseries. Congress adjourned to 3 o'clock p. m.

The afternoon session was opened with question.

III. HARVESTING, CONSERVATION, PACKING, AND TRANSPORTATION OF FRUIT.

Paper by M. Buisson. He criticised the question as covering three fields—the grower, the expert in systems of storage, and shipping agencies. The matter of packing was more freely discussed, but nothing new was disclosed.

IV. ATMOSPHERIC AGENCIES, THEIR INFLUENCE, ETC.

Simply mentioned the facts, well known to all, that moisture, heat, and cold affect greatly the result. Cited conditions for apples, peaches, prunes, cherries, etc.

V. "INFLUENCE OF THE PROCESS OF CULTURE ON THE PRODUCTION OF FRUIT, SUCH AS GRAFTING, TRIMMING, FORM, AND DIRECTION OF BRANCHES."

Paper by M. Nomblot, in which the question was ably handled. In grafting he advocated microscopic examination for determination of affinities, size of vessels, grain of wood, hardness, or lack of the same.

VI. TARIFFS AND CONDITIONS OF TRANSPORTATION.

It was stated that 150 to 200 kilometers distance to market cost from 50 to 70 per cent of the value of the fruit. The matter was discussed wholly as relating to France. M. Buisson and others took part in the discussion of the subject.

It was voted that the congress demand of the minister of agriculture a new tariff on fruits and vegetables. Also voted to demand amelioration in tariffs on international shipments.

VII. INSECTS, MALADIES, AND TREATMENT.

The use of sulphate of copper against fungi was recommended. Other well-known remedies were mentioned. It was voted that primary instruction in maladies of plants and insect enemies ought to be provided. The question of international action was thought impossible, but reference to action of European governments against American fruit indicated that better treatment would be accorded in future. It was voted to demand protection to insectivorous birds. Adjourned to 10 o'clock a. m., September 14.

At the session of September 14, 10 o'clock a. m., President Baltet was in the chair.

VIII. "FERTILIZERS AND AMELIORATION OF THE SOIL."

The preparation of the soil plays an important part in fruit culture and the depth of plowing to admit roots of the trees. The use of chemical fertilizers, such as phosphates, potash, and lime, was recommended. Soil analysis to determine how to use fertilizers was advocated, and the mixing of chemicals with farm manure. Nitrogen is essential to free growth, and phosphate to make hard, ripe wood. The chemist can give only general instructions. Each person must employ what is necessary for his soil. It is a mistake to plow under farm manure; it is injurious to bring it in contact with the roots of trees, and also delays its decomposition.

Baron de Salinxcher spoke on the question, and said that one must understand that conditions were entirely different than for annual plants. Yet his argument showed no point to support his statement. Stated that ammonia sulphate was the best form of nitrogen; chlorate of potassium best form of potash. Stated that chalk is an important element in soils for fruits. He cited abundant use of chalk scoria as assisting very much in crop, color, and quality of pears; also produced hard wood. The question was discussed by M. Giralome, of Italy, and M. Molnar, minister of agriculture of Hungary, but nothing new was added. Insisted on the difficulty of the subject.

Biological and physical action of fertilizers was strongly dwelt upon by President Viger. Adjourned to 3 p. m.

September 14, 3 o'clock p. m.—The first business of the session was the passage of a resolution for the preparation of an official list of fruits adapted to France.

2. The report of the committee on list of species and varieties of fruit for planting along roads was offered and adopted. This list will be published in the report of the proceedings of the congress. Pears, plums, and cherries were recommended; also fruits eatable out of hand and others for conservation. One and one-half meters was recommended for the height of the head of trees.

IX. "VEGETABLES AND FRUITS FOR COLONIES."

The report on this subject was of no interest to Americans, hence no notes are given here.

X. "TEACHING OF ARBORICULTURE AND FRUIT GROWING."

The paper on this question was principally a summary of the institutions giving instructions in horticulture, but contained nothing of interest. The reading of the paper was not completed.

President Viger criticised the bad form of many of the papers, and a vote was carried demanding that all papers in future should present a summary of the action needed to put in execution the ideas advanced and end with a concise résumé of the author's reasons and conclusions. After completing the programme, invitations were extended to members of the congress to join excursion parties to visit Thomery-Fontainebleau Nurseries at Châtenay, the School of Horticulture at Versailles, and other places of great interest to the horticulturist.

Two days were devoted to these excursions, and many members availed themselves of this excellent opportunity to visit these interesting examples of French horticulture.

CONGRESS OF AGRICULTURAL EXPERIMENT STATIONS.

The first international congress of Agricultural Experiment Stations was held in Paris June 18 to June 20 inclusive. M. Casimir-Périer, former president of the Republic, was the president of the board of organization, and as this was the first congress of its kind held on an international scale, all agricultural specialists were especially interested in its deliberations, in the amount of enthusiasm displayed by participants, and the amount and quality of the information presented. The line of discussion may be indicated as follows:

1. Soils and compost: Methods of analysis. Their unification. Interpretation of results. The agricultural value of various forms of phosphoric acid. Use of manure on the farm. Its conservation and treatment.

2. Feeding of live stock: Analysis of rough and prepared feed; unification of the analytical results. Adulterations and imitations in the food of animals. Rôle and importance of change in the rational feeding of animals. Use of sugar and molasses in the feeding of stock.

3. Analysis of wines and alcohol. Analysis of milk products. Analysis of butter, oils, margarin, etc.

5. Organization of stations.

CONGRESS OF MUTUAL BENEFIT AGRICULTURAL SYNDICATES.

The "syndicates agricoles," mutual benefit agricultural societies, have been considerably developed in France and have given the best results. Their action extends over the whole territory of the country and the services that they have rendered to agriculture are considerable.

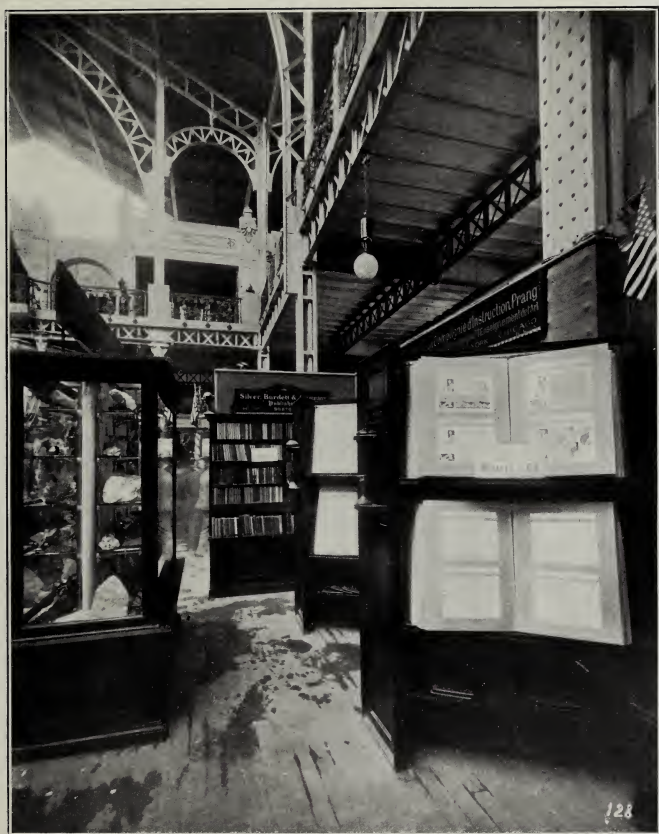
These societies are, properly speaking, cooperative societies which buy under good conditions what is necessary for the use of farmers and cultivators, and sell to their members, without profit, this same merchandise.

The organization of the present societies will give rise to discussions from which will certainly come information which will benefit not only the French societies, but all those who in all countries have at heart the development of agriculture.

The congress of agricultural syndicates was held in the palais de congrès, July 8 to July 14. The Marquis de Vogue, president of the Agricultural Society of France, was president of the organization committee. The congress was divided into four sections in order to cover as much ground as possible. The questions which came before the congress were as follows:

1. The agricultural syndicate movement: Consideration of professional agricultural associations in France and elsewhere. Their origin, legislation, object, results.

2. Cooperation in buying: How agricultural syndicates proceed in



VIEW OF EDUCATIONAL SECTION (LOCATED IN PALACE OF DIVERSIFIED INDUSTRIES),
DEPARTMENT OF EDUCATION AND SOCIAL ECONOMY, GROUPS I AND XVI.

making collective purchases of implements, etc., necessary for working the soil.

3. Cooperation in marketing agricultural products: Advantages of organization and collective sale of the products of members of the syndicates. Sale of fruit, garden products, eggs, butter, cheese, wine, olive oil, cider, etc. Sales in markets of cities. Exportation.

4. Cooperation in work and production: Clubs for the purchasing and use of expensive farm machinery. Thrashing grain in common.

5. Cooperation in stock raising: Societies for the protection of animals in France and abroad. Purchase of animals for breeding purposes by agricultural syndicates.

6. Cooperation in viticulture: Concerted action in protecting vineyards and improving vineyard products. Common efforts to protect the vines against late spring frosts.

7. Mutual assistance and aid guaranteed members of agricultural syndicates.

8. Various forms of insurance.

9. Mutual credit among agriculturists.

10. Practical and theoretical study of farming.

CONGRESS OF THE INTERNATIONAL COOPERATIVE ALLIANCE.

The fourth congress of the international cooperative alliance was held under the patronage of the French Government, in the series of official congresses of the Exposition. The meetings took place in the Exposition Palais des Congrès, which was built by the workingmen's cooperative societies of production of the city of Paris. The session opened on Wednesday, the 18th of July, 1900, and lasted five days. In the weeks preceding and following, the four other congresses on cooperative alliance (popular credit and loan associations, workingmen's associations of production, profit-sharing, and cooperative societies of consumption) held their meetings, thus allowing the members of any one to take part in the others. The call for the congress was signed by the Central Bureau in London and by the French committee of organization.

The international cooperative alliance, which was definitely organized at the London congress of 1895 and received its statutes at the Congress of Paris, 1896, is intended to propagate the principle of cooperation under all its forms—consumption (cooperative stores), credit (loan associations), production (workingmen's manufacturing associations, etc.), and profit sharing. It interests itself in no way with either politics or religion. Its aim is to bring the cooperators of each country and what they were doing to the knowledge of the cooperators of all other countries; to clear up and affirm the true principles of cooperation, and to establish, in the reciprocal interest of all cooperators, business relations among the cooperative societies of the various countries.

The three previous congresses of the international cooperative alliance—at London in 1895, Paris, 1896, and Delft, 1897—have had real and durable results. The resolutions adopted have, in many cases, served as a rule and guide of cooperative societies. As it was the delegates of such societies who chiefly formed the congress of 1900, its resolutions had great authority. It is important to know that the proceedings were organized with completeness in order to draw up the international statement of cooperation at the century's end.

According to the statutes of the alliance, the members of the congress were divided into three classes:

1. Those having the right to vote. Such were the delegates of groups, federations, and associations belonging to a cooperative society which was itself a member of the international alliance; also, individual members of the alliance who had the right of vote as representing ten members who had chosen them for the purpose.

2. Those who had a right to take part in the discussions without voting—individual members of the alliance.

3. As simple hearers (unless the committee should give them the floor), those societies and individuals who, without being members of the alliance, had been invited by the committee; also, the delegates of Government departments, both French and foreign, officially invited as such.

The work of the congress was divided under the following heads:

1. Report of the central committee on the progress of its labors since the last congress.

2. Report on the financial condition of the alliance.

3. Report of the representatives of the various countries on the condition of cooperation in their countries.

4. Means of developing the action of the cooperative alliance.

5. The cooperative principle in the matter of remuneration of labor and profit sharing.

6. Different forms of cooperation in production.

7. Commercial relations to be established in each country and from one country to another among industrial and agricultural societies of production and cooperative supply societies (of consumption).

8. Cooperative education and the means of organizing it.

9. Practical utility of wholesale stores for cooperative organization.

REPORT ON THE CONGRESS OF AMERICANISTS.

By Dr. THOMAS WILSON,

Curator, United States National Museum, Washington, D. C.

The international congress of Americanists was the outgrowth of the Société Americaine de France (Paris). At a meeting held at Paris, August 25, 1874, the organization of the former was perfected and con-

stitution, by-laws, and statutes adopted. Among the prominent provisions the object of the congress was set forth as "being to contribute to the progress of ethnographic, linguistic, and historic studies relative to North and South America, especially for the period belonging and anterior to Christopher Columbus." It was provided that the first session of the congress should be held in 1875, the locality to be designated by the council of the Société Americaine de France, the length of the session to be four days, with regular annual dues of 12 francs. Provisions were made for the election and duties of the officers; also, that all books, manuscripts, and other objects offered to the congress during a given session should belong to the city in which that session was held.

FIRST SESSION, NANCY, FRANCE, 1875.

By decision of the council of the Société Americaine of September 30, the city of Nancy was designated as the place of the first session of the international congress of Americanists.

On Monday, July 19, 1875, the congress assembled at 9.30 o'clock in the grand hall (Salle des Cerfs) of the ducal palace, which was decorated (at one extremity) with a double trophy of French flags supported by two grand panels of tapestry from the tent of Charles the Bold, Duke of Burgundy, and (at the other extremity) with flags of all American nations represented: United States, Canada, Mexico, Guatemala, Salvador, Honduras, Nicaragua, Costa Rica, Haiti, Santo Domingo, Colombia, Venezuela, Ecuador, Brazil, Peru, Bolivia, Argentina, Chile, Paraguay, and Uruguay. The organization was perfected by the election of Baron de Dumast, president of the committee of organization; vice presidents, MM. Lucien Adam, Ed. Madier de Montjau, Léon de Rosny, General Didion, with a secretary-general, M. Rambaud, and several assistants. A council was elected representing France and all foreign countries.

An exposition of American antiquities, principally those from Mexico and Peru, made largely by contribution of the members, was opened in one of the halls of the ducal palace.

Lists of persons subscribing and present were published, which it would be superfluous to give, but the report of the treasurer shows 1,572 subscriptions, of which 32 were from the United States. At this distance of time their names may be of interest:

- Anderson (R. B.), professor, University of Wisconsin.
- Bancroft (Hubert H.), San Francisco, Cal.
- Bennett (J. G.), editor of New York Herald, New York.
- Bertrand (L. A.), Salt Lake City, Utah.
- Blum (Maurice), St. Louis, Mo.
- Brigham (Dr. Chas. E.), San Francisco, Cal.
- Brooks (Charles W.), San Francisco, Cal.
- Cazade (Ed.), merchant, New York.
- Clary (R. E.), brigadier-general, United States Army.

Conscience, employé de commerce, New York.
 Gillett (Felix), Nevada City, Cal.
 Haynes (Prof. H. W.), Boston, Mass.
 Henry (Professor), director Smithsonian Institution, Washington, D. C.
 Jurrl (Charles B.), San Francisco, Cal.
 King (Edward), reporter of New York Herald.
 Marks (Alexander), vice-consul at New Orleans, La.
 Moody (J. D.), Mendota, La Salle County, Ill.
 Parkman (Francis), Boston, Mass.
 Read (Gen. Meredith), United States minister, Athens, Greece.
 Rillieux (Norbert), egyptologist, New Orleans, La.
 Salisbury (Edw. B.), secretary Oriental Society of America.
 Schliemann (Henry), Athens, Greece.
 Squier (E. G.), New York.
 Stout (Dr. Arthur B.), San Francisco, Cal.
 Strong (Charles Edward), advocate, New York.
 Taylor (Alexander), Santa Barbara, Cal.
 Torberg (General), consul-general, Paris, France.
 Trumbull (Hammond), president Society American Philology, Hartford, Conn.
 Ventromile (Eugene), Eastport, Me.
 Winthrop (Robert C.), president of the Historical Society of Massachusetts, Boston, Mass.
 Whittlesey (Charles).
 Whitney (W. D.), professor of Sanscrit and comparative philology, Yale College, New Haven, Conn.

Papers were read, speeches made, and discussion carried on upon the general subject belonging to the congress, as follows:

- "Pre-Columbian America," by M. Benedict Gröndals.
- "Discovery of the New World," M. E. Beauvois.
- "The Phenicians in America," M. Gaffarel.
- "Buddhism in America," M. Foucaux; the same by M. de Rosny; with discussion by MM. Dally, R. P. Petitot, Torrès Caicedo, De Hellwald.
- "The Fou-Sang," M. Lucien Adam; discussion by M. Joly.
- "Atlantis," M. Chil y Naranjo.
- "Dighton Rock," M. G. Gravier.
- "A Dream of Columbus," M. Castaing.
- "Grave Creek Inscription, Moundsville, W. Va.," M. Lévy Bing; discussion by M. Dally.
- "America and the Portuguese," M. M. Luciano Cordeiro; discussion by Professor Haynes.
- "The polar region, Arctic and Antarctic," M. Daa.
- "The Èskimo," R. P. Petitot.
- "Indians of the United States," M. de Semallé.
- "Ancient races of Peru," M. John Campbell.
- "Colombian skulls," M. Paul Broca.
- "The aborigines of Hayti," M. Madiou.
- "The tradition of the white man," M. Madier de Montjau.
- "An Iroquois manuscript," M. Léon de Rosny.
- "The mound-builders," M. Joly.
- "The Indians of French Guiana," M. Dupont.
- "The Caribs," M. Ballet.
- "The origin of the peoples of America," M. le Baron de Bretton.
- "The Indians of Peru," M. Ber.

- "Le Maguey," M. Godron.
- "The guano of Peru," M. Ridel.
- "The Cheyenne and Quichua languages," M. Lucien Adam.
- "Les Déné-Dindjiés," R. P. Petitot.
- "An Iroquois manuscript," "The relation of words," M. Lucien Adam.
- "The Basque and American languages," M. Julien Vinson.
- "Decipherment of Maya inscriptions," M. Léon de Rosny.
- "Central America," M. Blaise.
- "The Society of Quakers," M. Maguin.
- "Propositions," M. Lagier.
- "The Cree and the Chippewa," M. Lucien Adam.
- "Anthropology of the Antilles," M. Cornilliac.
- "Definitive statutes," and "Traditions of the Greenlanders" MM. Rink and Valdemir Schmidt.
- "The Newark inscription," M. Henry Harrisse.
- "Ancient America," M. Francis A. Allen.
- "Asiatic immigration," R. P. Petitot.
- "Decorations on ancient Mexican stirrups," M. Eugene Boban.
- "Archæologic analogies," M. Morey.
- "Prehistoric Canada," M. le Métayer-Masselin.
- "Museum of St. Petersburg," M. Schœbel.
- "Ancient American music," M. Oscar Comettant.
- "Phonetic alphabet of the Bihua language," M. Pacheco-Zegarra.
- "Language of enumeration of the Mayas," M. Léon de Rosny.

The proceedings were reported in two volumes, containing, respectively, 480 and 478 pages.

SECOND SESSION, LUXEMBOURG, 1877.

The second international congress of Americanists was held at Luxembourg from the 10th to the 13th of September, 1877. A programme was made out and questions and subjects proposed by the committee of organization. It was decided that the first day should be devoted to the histories of the discovery of the New World; the second, to archæology; the third, to linguistics and paleography; and the fourth, to anthropology and ethnography. The delegation from the United States was as follows:

- S. Ex. M. Hayes (Rutherford B.), President of the United States of North America.
- Abbott (Charles C.), Trenton, N. J.
- Aldrich (Charles), Webster City, Iowa.
- Bancroft (Hubert H.), San Francisco, Cal.
- Barber (Edwin A.), West Chester, Pa.
- Bishop (Levy), Detroit, Mich.
- Deane (Charles), Cambridge, Mass.
- Clarke (Robert), Cincinnati, Ohio.
- Dexter (Julius), Cincinnati, Ohio.
- Force (Judge M. F.), Cincinnati, Ohio.
- Frothingham (Richard), Boston, Mass.
- Gillman (Henry), Detroit, Mich.
- Gonner (Nicholas), editor Luxembourg Gazette, Dubuque, Iowa.
- Green (Dr. S. A.), Boston, Mass.
- Haldeman, professor comparative philology, Chickies, Pa.

Haven (S. F.), Worcester, Mass.

Henry (Joseph), director of the Smithsonian Institution, Washington, D. C.

Moody (J. D.), Mendota, La Salle County, Ill.

Parkman (Francis), Boston, Mass.

Peet (Stephen D.), Ashtabula, Ohio.

Pexton (Lewis), Staunton, Va.

Robertson (Robert S.), attorney at law, Fort Wayne, Ind.

Salisbury (Stephen), Worcester, Mass.

Salisbury (Stephen, jr.), Worcester, Mass.

Historical Society of Massachusetts, Boston, Mass.

Slafra (Rev. E. F.), Boston, Mass.

Stone (E. M.), Providence, R. I.

Strong (Charles Edward), advocate, New York.

King (Wilson), consul of United States, Bremen, Germany.

Winsor (Justin), Boston, Mass.

Winthrop (Robert C.), president of the Historical Society of Massachusetts, Boston, Mass.

Whittlesey (Col. Charles), Cleveland, Ohio.

There were 1,026 persons registered, and the total revenue was 12,312 francs.

The proceedings were published in two volumes, containing, respectively, 539 and 471 pages.

Papers were read, speeches made, and discussions carried on as follows:

"The ancient pueblos," M. Edwin A. Barber.

"The mound-builders of America," M. Robert S. Robertson.

"The Chinese in California," M. Emile Guimet.

"Evidence in osteology furnished by the ancient mounds of Michigan," M. Henry Gillman.

"Ancient America, or origin of the primitive civilization of the New World," M. F. A. Allen.

"The mound-builders," M. Stephen D. Peet.

"To what race belonged the mound-builders?" M. M. F. Force.

"The origin of the languages, the mythology, and the civilization of America," M. Hyde Clarke.

"The European colonies of Markland and the l'Escociland in the XVI century and the traces thereof continuing through the XVI and XVII centuries," M. E. Beauvois.

"Civil legislation of the Mexicans under the Aztec emperors compared with that of the Peruvians at the epoch of the Incas," M. J. F. Nodal.

"The course of the Mississippi," M. Gabriel Gravier.

"A chronological datum for the history of the mound-builders," M. Stronck.

"On the migration of the Nahuas," M. J. H. Becker.

"Americus Vespuccius," Dr. Schœtter.

"The Eries or Ka-kwaks and their destruction by the Senecas," M. l'Abbé Schmitz.

"Conquest of the ancient Chilians by the Peruvians in the days of the Incas," M. H. Savary.

"Pay-Tuma," M. l'Abbé Schmitz.

"Prehistoric synchronism," M. A. Bamps.

"The discovery of Brazil by the French," M. P. Gaffarel.

"Mémorial on Brazil," M. Burtin.

"The voyage of Verrazzano," M. Desimoni.

"Chart showing the ethnographic distribution of the nations and languages of Mexico," M. Malte-Brun.

"The Atacameña language," M. Moore.

"The manuscripts of M. Platzmann."

"Comparison of the American languages with the Ural-Altaïchen with regard to their grammar," M. Forch-Hammer.

"The Quichua; is it the Aryan language? A critical examination of the work of Don V. F. Lopez, 'The Aryan races in Peru,'" M. V. Henry.

"Inscribed tablet, discovered by M. J. Gass."

"The Rockford tablet," M. Moody.

"A comparative examination of the grammar of sixteen American languages," M. Lucien Adam.

"Principles of the Cree language," M. R. P. Rémas.

"The stone age at the Exposition at Philadelphia," M. Emile Guimet.

"The National Library of Rio de Janeiro," M. Ferdinand Denis.

"Description of certain American antiquities in the Royal Museum at Leyden," M. Leemans.

"A chapter in American archæology," M. C. Schœbel.

"A rock-shelter in Pennsylvania," M. S. S. Haldemann.

"Primitive habitations of the Eskimos," M. H. Rink.

"The antiquity of man in America attested by flint," M. Jean Engling.

"Collection of Emile de Ville, consul of Belgium at Quito."

"Phonetic elements in the figurative writings of the ancient Mexicans," M. l'Abbé Jules Pipart.

"The American Library and Museum at Nancy."

"A portrait of Christopher Columbus," M. Rinck.

THIRD SESSION, BRUSSELS, BELGIUM, 1879.

The third international congress of Americanists, held at Brussels, Belgium, from the 23d to the 27th of September, 1879, was under the presidency of Lieut. Gen. Baron Goethals, with four vice-presidents. On the council the United States was represented by Hon. James Birney, minister to the Hague. The number of members who had signified their adhesion was 1,110. Proceedings of this congress were reported in two volumes, of 679 and 835 pages, respectively, with 24 plates, and an extra volume of 39 plates. Memoirs were presented, papers read, and addresses delivered as follows:

HISTORY.

"Pre-Columbian historical documents of Mexico and Anahuac," M. André de Bellecombe.

"The Mexican Calpullis, their origin and the communistic principle implied," M. Adolph Bandelier.

"Norambègué, with the proofs of its Scandinavian origin as furnished by the language, the institutions, and beliefs indigenous to Acadie," M. Eugene Beauvois.

"Explorations of the Amazons by the Franciscans of Peru," M. P. Servais Dirks.

"Progress of American cartography during the XVI century," Rev. F. B. De Costa and Lieutenant-Colonel Adan.

"An unknown map or chart, the first made by Joliet, in 1674, after his exploration of the Mississippi in company with Marquette, in 1673," M. Gabriel Gravier.

"Observations on the first published letters of Americus Vespuccius," M. F. Force.

- "Influence of orography on civilization in North America," Dr. Charles Barrios.
- "Books and printing in Spanish America from the XVI to the XVIII centuries," M. Vicente G. Quesada.
- "Antiquity of different States in the Canadian Confederation," M. H. Burtin.
- "Giovanni Varrazzano and his discoveries in North America," Cornelio Desimoni de Genova, with note and appendix.
- "Observations on the methods of speaking by men and women in the Carib language," M. Lucien Adam.

ARCHÆOLOGY.

- "Peruvian pottery in the Society for American Studies at Nancy," M. Jules Renauld.
- "Traces of Christianity and the white man in America before its discovery by Columbus," M. l'Abbé Schmitz.
- "The white man and the cross in America," M. Peterken.
- "The white man and the pre-Columbian cross in Peru," D. Marcos Jiménez de la Espada.
- "Carib stone hatchets in the collection of M. L. Guesde."
- "American antiquities recently acquired by the Royal Museum at Leyden," Dr. Leemans.
- "The antiquities of Greenland," M. Valdemir Schmidt.
- "The latest discoveries in the mounds," Rev. J. Gass.
- "Animal-shaped mounds in America compared with those in Europe and Asia," Dr. Phéné.
- "The probable destination of the Inca-Chunca," M. Jean Van Volxem.
- "South American antiquities in the Royal Museum (Porte de Hals), Brussels," M. Anatole Bamps.
- "Antiquities in the valley of San Augustine, United States of Colombia," M. José Maria Gutierrez de Alba.

ANTHROPOLOGY AND ETHNOGRAPHY.

- "Influence of American conditions upon the white man," M. Grattan.
- "Existence of man in North America during the glacial period," M. Sidney Skerthly.
- "The reefs of the island of St. Paul and their relation to the submerged continent of Atlantis," M. l'Abbé Renard.
- "The last of the Mexican races in the United States," M. Edwin A. Barber.
- "The great antiquity of man in the New World," M. Florentino Ameghino.
- "The cosmogony *Algique*," Count Charency.
- "Primitive origin of the Indians of South America," Mme. Marcella J. Wilkins.

LINGUISTICS AND PALEOGRAPHY.

- "Grammatical comparison of fourteen American languages," M. Lucien Adam.
- "Grammar of the Mosquito language," and "Mosquito-German and German-Mosquito Dictionary," M. Edward Grünewald.
- "Inscribed stones, purporting to be in Hebrew, from Licking County, Ohio," M. Charles Whittlesey.
- "Comparison of the grammar of three hyperborean languages: Greenland, Tchiglerk, and Aleut," M. Victor Henry.
- "Comparison of the languages of Aymara, Quichua, and the dialect of Quito," M. José Fernandez Nodal.
- "Some linguistic principles of the Othonie language," Professor Harlez.
- "Affiliation of American languages," M. John Campbell.

"The idol of Guaqui," M. Marcos Jiménez de la Espada.

"Philologic notes," M. P. Vegréville.

"The Mexican calendar," M. Manuel Orozco y Berra.

"Pre-Columbian inscriptions in Argentina," M. Florentino Ameghino.

"Prehistoric bells from South America."

"The Mashōki Indian language and its dialects, notably the Hitchiti," M. Albert Gatschet.

"The deciphering of certain Maya characters," Count Charency.

"Tradition of the 'Pa' Snuta," Rev. J. Owen Dorsey (Letter.)

FOURTH SESSION, MADRID, SPAIN, 1881.

The fourth international congress of Americanists, held at Madrid, Spain, from the 25th to the 28th of September, 1881, was under the presidency of Don José Luis Albareda, with many of the high officers of the Spanish and other governments as presidents of honor. Each of the countries represented furnished a member of the central committee. Mr. J. L. Butler was the representative from the United States, and Hon. James Russell Lowell was vice-president from the same country. The proceedings were, for the most part, reported in the Spanish language and comprised two volumes (pp. 419 and 417, respectively).

One of the interesting incidents of this congress was the exposition of American antiquities collected from the various museums in Madrid. The *Museos Arqueológico, Naval, de Ciencias y de Artillería, Los Archivos Histórico-Nacional y de Indias, la Real Academia de la Historia y otros oficiales*.

Memoirs were presented, papers read, and addresses delivered as follows:

"La grande terre de l'Ouest dans les documents celtiques du moyen-âge," M. E. Beauvois.

"¿Puede deducirse de la historia y del estudio de las fenómenos geológicos que ofrece la isla de Cuba que ésta haya estado unida ó no al Continente de América en los tiempos precolombianos?" D. M. Fernández de Castro.

"La isla de Cuba estuvo unida un día al Continente americano," D. M. Rodríguez Ferrer.

"Fr. Bartolome de las Casas," D. A. M. Fabié; Contestación de D. M. Jiménez de la Espada; Discurso del Sr. Arias Miranda; y Rectificación del Sr. Fabié.

"¿Son apócrifos los viajes de Juan de Fuca y de Lorenzo Ferrer Maldonado?" D. P. de Novo y Colson.

"Noticias del Museo de Berlín," M. W. Reiss.

"Hypothèse sur la Disparition de l'Atlantide," Mme. Marcella T. Wilkins.

"Pruebas geológicas de la existencia de la Atlántida; su fauna y su flora," D. Federico de Botella.

"Telegrama enviada á la viuda del general Garfield, Presidente que fué de los Estados Unidos de América."

"Observaciones sobre geología de Cuba," M. H. de Saussure.

"Fray Bernal Buil y Don Pedro Margarit," P. Don Fidel Fita.

"Des voyages réels ou prétendus des juifs avant Christophe Colombe," M. l'Abbé Louvet.

"L'île des Septs Cités el l'île Antilia," M. Paul Gaffarel.

"Pedro Cieza de León," Sr. Jiménez de la Espada.

"Expediciones precolumbianas de los vizcainos á Terranova y á los países del litoral inmediato," D. C. Fernandez Duro.

"Progreso de la cartografía americana," D. D. Fernández Duro.

"El museum de Berlín," Sr. W. Reiss.

"De los terrícolas cubanos con anterioridad á los que allí encontró Colón, según pueda referirse de las antigüedades encontradas en esta isla," D. M. Rodríguez Ferrer.

"Rapport de M. Henri Saussure sur un os maxillare inférieur trouvé à Cuba;"

"Dictamen acerca de la misma mandíbula," del Doctor D. J. B. Híjar y Haro.

"Memoria acerca de la prioridad del descubrimiento por los Españoles de la región de los lagos," M. George A. Leakin.

"Smithsonian Institution; an account of its operations," J. W. Powell.

"A brief review of the native American pottery," Edwin A. Barber.

"¿Cuáles son las principales enfermedades contagiosas que reciprocamente han cambiado entre sí los pueblos del Antiguo y del Nuevo Mundo?" D. B. Montejo y Pobledo.

"Des âges ou soleils d'après la Mythologie des pueples de la Nouvelle-Espagne," M. le Comte de Charency, with discussions by Sr. Jiménez de la Espada, Dr. Reiss, and M. Bamps.

"The relations between the Basque dialect and the American Indian languages," R. P. Fita.

"The Maya codices and their interpretation according to the Peruvian vases," Sr. Rada y Delgado.

"Philology," Comte de Charency; discussion by M. Julés Vinson.

"Descripción del Palacio del Callo;" "Presentación de una colección de yaravies ó melodias quiteñas," Sr. Jiménez de la Espada.

"Noticias del Callo," Dr. Reiss; discussions by Sr. Jiménez de la Espada and Sr. Fernández de Castro.

"Relación de la villa de Valladolid en Yucatán," Dr. Marimon.

"The kjœkkenmœddings of Dinamarca," M. Beauvois.

"Adición respecto á los fósiles de la isla de Cuba," Sr. Rodríguez; discussion by Sr. Fabié.

"Conocimiento de los idiomas americanos," M. Vinson; discussion by Sr. Fabié and Sr. Jiménez de la Espada.

"Razonamiento sobre relación entre la lengua euskara y las egipcias," Sr. Mínguez; discussions by Sr. Rada y Delgado, R. P. Fita, and Sr. Mínguez.

"Memoria sobre la influencia de los conventos de la Rábida y de San Esteban se Salamanca en el descumbrimiento de América;" and "Linguistics," M. Dognée.

"Presentación de una gramática," Sr. Quijano Otero.

"Gramática, frases, oraciones, catecismo, confesionario y vocabulario de la lengua Chibcha."

"Gramática y vocabulario de la lengua que hablan los indios Darienes," Dr. D. José Vincente Uribe.

"Du genre dans la langue Hastri ou Taensa," M. J. Parisot.

"Primitive Cuba," D. Antonio Bachiller y Morales.

"Vocabulario de los idiomas Runsien y Eslem," Padre Fray Francisco Garcés.

"Memoria descriptiva del Museo Macedo," Sr. Pacheco Zegarra.

"Acta de posesión y carta de la nueva tierra de Santa Cruz (California)," Hernán Cortéz.

"Carta del Marqués de Valle á Cristobal de Oñate."

"Proposición de una biblioteca americanista," Sr. Gutiérrez; discussion by M. Bamps.



UNITED STATES EDUCATIONAL SECTION, GROUP I, CHAMP DE MARS.

FIFTH SESSION, COPENHAGEN, DENMARK, 1883.

The fifth international congress of Americanists was held at Copenhagen from the 21st to the 24th of August, 1883, under the presidency of Mons. J. J. A. Worsaae, a cabinet minister of the Kingdom, with M. Wickham Hoffman, who was the minister resident of the United States at Copenhagen, as one of the honorary vice-presidents. The delegation from the United States of America was as follows:

Brinton (Dr. Daniel G.), delegate of the Philosophical Society and the numismatic and antiquarian societies of Philadelphia.

Force (Manning F.), Cincinnati, Ohio.

Ober (Frederick A.), Massachusetts.

Phillips (Dr. Henry), Philadelphia.

Reynolds (Elmer R.), Washington, D. C.

Schmidt (Theodore), vice-consul of Denmark at New York.

There were about 1,000 subscribers, representing most of the countries from Europe and America, and more than usual of scientific societies or organizations represented by special delegates. The usual ceremonies of reception by the King, banquets, etc., were carried on. Much interest was manifested. The following papers were read and addresses delivered, bearing upon the general subject of the congress:

"On certain skulls and human bones of Minasgêraes in Brazil," M. Lütken.

"Study of M. Duro on the discovery of the Western Continent by Columbus, and the participation therein of Martin Alonso Pinzón," M. Herrera.

"Aboriginal American literature," M. Brinton.

"The Vineland excursions of the ancient Scandinavians," M. Löffler.

"The precolumbian relations between the Gauls and the Mexicans," M. Beauvois.

"The old Scandanavian ruins in the district of Julianehaab, south Greenland," M. K. Steenstrup.

"On three of the most ancient maps or charts of the north," M. Bahnson.

"The origin of the Americans," M. Lucien Adam.

"The prehistoric traditions relative to the white man and the sign of the cross in America," M. Bamps.

"The lost history of America," M. Blackett.

"How far did the Scandinavians penetrate toward the North Pole?" M. Brynjulfsen.

"Voyages of the Zeni fathers to the north," M. J. Steenstrup.

"Nautical remarks about the Zeni voyages," M. Irminger.

"The voyages of the Danes to Greenland," M. V. Schmidt.

"Peruvian vases in the Archæological Museum at Madrid," M. de la Rada.

"Polynesian antiquities: A link between the ancient civilization of Asia and America," M. Allen.

"American prehistoric pottery considered with regard to its pate and fabrication," M. Bamps.

"Ancient ornament made from pottery," M. Barber.

"On the paleolithic implements from the valley of the Delaware River, near Trenton, N. J.," M. Abbott.

"The precolumbian shell mounds at Newburg, Md.," M. Reynolds.

"Sculpturings from neolithic grottoes, and prehistoric trepanation," M. de Baye.

"Ornamentation by the American people," M. Stolpe.

"Eskimo dialects," M. Rink.

"Wherein does the Eskimo language differ grammatically from other native languages of North America?" M. Lucien Adam.

"The deciphering of Maya inscriptions," M. de la Rada.

"On the Timucua language," M. Vinson.

"An ethnographic chart of North America," M. Vahl.

"Coloring matter employed by the American Indians," M. Vera.

"Upon the variations occurring in the physical geography of the American continent from the epoch of the discovery until the present day," M. Vera.

"Formation of certain words in the Maya language," M. de Charency.

Reported in one volume of 436 pages, with five plates and various text figures.

SIXTH SESSION, TURIN, ITALY, 1886.

The sixth international congress of Americanists was held September 2 to 5, 1886, at the city of Turin, Italy, but I have not been able to find any report of it.

SEVENTH SESSION, BERLIN, GERMANY, 1888.

The seventh international congress of Americanists met at the city of Berlin, Germany, October 2 to 5, 1888, with Herr Dr. Reiss, of the Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte of Berlin, as president.

Former congresses had provided for divisions of time among specified germane subjects: (1) Geography, history, and geology; (2) archaeology; (3) anthropology and ethnography; (4) linguistics and paleography; but the last, held at Turin, Italy, had gone further and provided that the committee, in addition, subdivide the general subject, present specific questions for discussion, and a reporter should be chosen for each question, whose duty it should be to present an address or argument upon the question assigned to him, and that this should be used to open the debate on that question.

The proceedings of the congress were voluminous, filling a volume of 806 pages, with 7 plates, and comprising the following memoirs, papers, and addresses:

GEOGRAPHY, HISTORY, AND GEOLOGY.

"The origin of the name America," M. Cora, of Italy, reporter.

"Basques, Bretons, and Normans on the shores of North America during the early years of the sixteenth century," M. Gaffarel.

"Publication of documents relative to Christopher Columbus and his time, on the celebration of the fourth centenary of the discovery of America," M. Cora, with discussion.

"History of primitive legislation in the Spanish States of America," résumé, M. Fabie.

"Observations upon modern literature upon the discovery of America," M. Geleisch, of Austria.

"On the Nahuatl version of Sahagun's *Historia de la Nueva España*," Dr. Daniel G. Brinton.

ARCHÆOLOGY.

- "Certain archæologic objects of Mexico and South America," résumé, M. Heger.
- "Stone collars of Porto Rico," Jiménez de la Espada (oral address, not printed).
- "Antiquities from Vera Cruz, Mexico," M. Strebel.
- M. E. Seler presented the archæological results of his last voyage to Mexico.
- "An ancient Mexican mosaic," Richard André.
- "Preliminary notes on the origin, working hypothesis, and primary researches of the Hemenway Southwestern Archæological Expedition," Frank Hamilton Cushing, read by Prof. E. S. Morse.
- "Antiquities from Nicaragua," M. Bovallius.
- "Ancient pottery from the Island Marajo," M. Netto.
- "The locality of origin of nephrite and jadeite," M. Virchow (see Sixth congress International D'Anthropologie and D'Archeologie Prehistoriques, 1872, p. 351, Desor).
- "Antiquities of Costa Rica" (photographs), M. Polakowsky.
- "The spread of the Eskimo races," M. Rink.
- "Observations on the Aztecs and their probable relations to the Pueblo Indians of New Mexico," M. Evans.
- "The employment of coca in the northern part of South America," M. Ernst.
- "The exportation of antiquities of Mexico—law prohibiting," letter of M. Désiré Charnay.
- "The investiture of a rich Guajiro Indian," M. Pleyte.
- "American craniology," M. Virchow.
- "On an anatomical characteristic of the hyoid bone of the pre-Columbian Pueblo Indians of Arizona," MM. Wortman and Ten Kate.
- "The question of the unity of the native American races, based on their hair growth," M. Fritsch.
- "The chronology of the people of the diluvian epoch in North America," M. Emile Schmidt.
- "Vestiges of the pre-Columbian population of Nicaragua," M. Pector.
- "Ancient domestic animals of Peru," M. Nehring.
- "Useful plants of ancient Peru," M. Wittmack.
- "Rights and morals of the ancient Mexicans," M. Grossi.
- "Cannibalism and human sacrifice in pre-Columbian America," M. Grossi.
- "Cremation in antique America," M. Grossi.
- "The anthropology of the Anahuacs in the time of Cortez," M. Hartmann.
- "Was America peopled from Polynesia?" M. Horatio Hale; read by M. Steinthal.
- "Study of the Mam language," Count de Charency.
- "Text analysis and vocabulary of the Timucua," M. Raoul de la Grasserie.
- "The linguistic family of Pano," M. Raoul de la Grasserie.
- "The historical archives of the Hemenway Southwestern Archæological Expedition," M. Bandelier.
- "The Sambaquis (shell heaps) of Brazil," M. H. Müller.
- "Comparison between the Ketschua and Aymara tribes," M. Steinthal.
- "An ancient map of America," M. Gaffarel.
- "Wanderings of the Tschibtscha," M. Uhle.
- "Three linguistic families of the valleys of the Amazon and the Orinoco," M. Adam.
- "Bibliography of recent linguistic discoveries in South America," M. Adam.
- "Der Tonalamatl der Aubin'schen Sammlung und der verwandten Kalenderbücher," M. Seler.
- "The decipherment of Maya handwriting," M. Förstemann.
- "Chronologic classification of the architectural monuments of ancient Peru," M. Borsari.
- "Contribution to the Americanisms of Cauca (Colombia)," M. Douay.
- "Languages of the people inhabiting Central South America," M. von den Steinen.
- "Peruvian figures in silver," M. Lüders.

EIGHTH SESSION, PARIS, FRANCE, 1890.

The eighth international congress of Americanists was held in Paris, France, from the 13th to the 20th of October, 1890, under the presidency of M. de Quatrefages, member of the institute. Dr. Brinton was one of the vice-presidents, and Mr. Phillips a member of the council. There were 434 subscribers, of whom 148 were present. The adherents of the congress were divided as follows:

France and colonies, 128 (Guiana 1, Guadeloupe 1); Central America, 47 (Nicaragua 14, Salvador 13, Costa Rica 8, Guatemala 8, Honduras 4); Germany, 42; United States, 31; Spain and colonies, 25 (Cuba 7, Porto Rico 1); Great Britain and colonies, 18 (Canada 7, Trinidad 2); Mexico, 15; Belgium, 12; Brazil, 11; United States of Colombia, 9; Italy, 8; Netherlands and colonies, 8 (St. Martin 1); Argentine Republic, 7; Peru, 7; Venezuela, 7; Denmark, 6; Portugal, 6; Bolivia, 5; Dominican Republic, 5; Ecuador, 5; Austria-Hungary, 4; Haiti, 4; Paraguay, 4; Russia, 4; Chile, 3; Sweden, 3; Uruguay, 3; Switzerland, 2; Hawaii, 1; Japan, 1; Luxembourg, 1; Norway, 1; Roumania, 1.

The same procedure prevailed in this as in former congresses, and questions proposed by the committee of organization will appear in the further report. The general divisions were as usual—(1) history and geography, (2) anthropology, (3) ethnography, (4) archaeology, (5) linguistics, and (6) paleography.

The first serious business before the congress related to the history and origin of the name America applied to the western continents. Prof. Jules Marcou, M. Desiré Pector, and Don Julio Calcaño argued that the name America was indigenous and derived from certain geographic localities on the continent. Professor Hamy and M. Jiménez de la Espada combated this theory fiercely, and successfully demonstrated that the name had been given at the convent of San Die, and was taken from a report of his discoveries by Americus Vespuccius communicated by Waldsee Müller. There was some extended discussion, which was finally closed by the president with the declaration that "Now the question of the name of America is settled forever, I hope it will never more figure on the programmes of our congresses."

The question of the first discovery of America (relating to Scandinavian discovery of Vineland) begot a discussion between M. Saint-Bris and Sn. Dom Pedro, of Brazil. The former, who is a believer in the discovery of America before Columbus, cited as evidence the old mill at Newport, R. I.; also the voyage of Corte Real in 1464, of Sanchez de Huelva, of the Nuremberg MS. of 1487, with original notes by Martin Beheim, and the voyage of Cousin de Dieppe in 1498; the chart of Sebastian Cabot, reported by Louis Cabot, who says his first voyage took place in 1497; and the voyage of the Chinese to America in the fifth century of the Christian era. MM. Gaffarel and Borsari attacked the authorities of M. Saint-Bris, essaying they were unworthy of credence.

Mr. Hyde-Clarke presented a memoir on the subject of "Prehistoric communications between America and the Old World," in which he introduced the ancient theories and traditions concerning an unknown continent in the Atlantic Ocean. His main dependence seems to have rested on the writings of Plato and the similarity in names of places in the Old and New Worlds. The discovery of the King Atlantis

seems to form his strongest argument. The similarity of names in the two continents as set forth in his Prehistoric Comparative Philology, and the same on the four quarters of the globe in the school of Pergamos, illustrate his position.

Mrs. Mary A. Shipley (née Brown) presented what she called "The missing records of the Norse discovery of America."

"Migration of the Irish to America in the Middle Ages," by M. E. Beauvois. He alleges there were two such migrations, the first in the eighth century, and the second in the fourteenth, alleged to have been made by Irish priests, who carried to America the knowledge of the Christian religion. Similarities of this religion in the two countries are the principal foundation for this theory. The Christian crucifix is alleged to still exist at Merida, in Yucatan, which has been a subject of idolatry since before the time of Cortez.

"The geography of the ancient Scandinavian colonies, principally those of Greenland," by M. Valdemir Schmidt.

M. J. Girard Real presented photographs of the last page of the treaties made in 1666 by the governor of Canada for Louis XIV with the ambassadors of the four or five nations, showing their totems or distinctive marks of their tribes, which were employed by them as signatures.

M. Altamirano presented a translation, made by himself, of Mr. A. F. Bandelier's "Art of war among the ancient Mexicans."

"The discoveries of the Portuguese in America in the time of Columbus," by MM. Gaffarel and Charles Gariod. This related principally to the voyages and discoveries of Corte Real. M. de Peralta noted the correction to be made in the date of the death of Vasco de Nuñez de Balboa, who was decapitated January 12, 1519, and not in 1517, as generally believed.

"Observations on the history of the banana in America," by Dr. A. Ernst.

"The later researches on the history and voyages of Christopher Columbus; is there an authentic portrait of Christopher Columbus?" by M. J. Silverio Jorin.

"Where are the ashes of Christopher Columbus?" by Dr. Francisco Henriquez y Carvajal.

CARTOGRAPHY.

"On the early cartography of North America," by Mr. John B. Shipley.

"Certain documents little known relating to the discovery of America," by M. Gabriel Marcel. This treated of the manuscript globe of the Schöner school in the Bibliotheque National, Paris, called "the green globe," and presented in 1879 by the late Count Riant, who had himself purchased it in Venice.

ANTHROPOLOGY.

"The plurality of races in America," by Dr. H. ten Kate.

"The first Americans," Marquis de Nadaillac.

"The Asiatic origin of the Eskimo," M. l'Abbé Emile Petitot.

"Acclimation of the Europeans in America," Miss Rose Lyon.

"Appunti sulla geografia medica de Brasile," Dr. Victor Grossi.

"Artificial deformation of the skull among the Indians of Northwest America and British Columbia," Dr. Ferdinand Delisle. These deformations were in former times distributed over almost the entire hemisphere, but at present are confined generally to the northwest coast of America and British Columbia, the principal center being Vancouver Island or Nootka Sound. There are several types of deformation in usage on the Northwest coast.

"The cliff dwellers of the Sierra Madre," Dr. E. Hamy. The author notices the discoveries of the subject of this paper by Messrs. Jackson and Holmes, and gives a general description.

"Dental anomalies and mutilations among the pre-Columbian Tarasques," by Dr.

N. Leon; the same "Among the Indians of the Isthmus of Panama," by M. A. L. Pinart.

"Collection of portraits of aborigines of Brazil," by P. Ehrenreich, made during his explorations in 1884-85 and 1887-1889.

"Fossil man of the Rio Samborombon," Dr. J. Villanova.

"Fuegian Anthropology," Dr. Deniker.

ETHNOGRAPHY.

"Sacred hunts of the American Indians," Capt. John G. Bourke, U. S. A. The author describes a sacred hunt he witnessed while among the Zúñi Indians. It was made for the purpose of supplying the sacred eagles with meats, and shows how these were mentioned by the Spanish historians. He also describes the boomerang of the Zúñis and Mokis.

"Analogies between the civilization of North and Central America and that of Asia," Desiré Charnay.

"Huitzilopochtli, the Aztec God of War," Dr. Edward Seler.

"Ancient Mexican studies," Dr. E. Seler, forms the fourth part of the first volume of publications of the Museum of Ethnography of Berlin, and gives the Aztec text of the original of the manuscript of history of P. Sagahun in the library of the Palais Royal at Madrid, giving the dress and ornaments of 36 Mexican divinities.

"Art of the ancient Mexicans in gold, stone, and feather work," Dr. E. Seler.

"Feather work in Mexico," Mrs. Zelia Nuttall.

"Popular melodies among the Indians of Guatemala," M. Raymond Pilet.

"Limits of civilization on the Isthmus of Panama," M. A. L. Pinart.

"The Island of Aruba, its inhabitants, antiquities, and petroglyphs," M. A. L. Pinart.

"The Caribs," M. R. De Semallé.

"The discovery of the Rio Apure," Mons. Justo Zaragoza.

"Ethnography of French Guiana," water-color drawings, M. Fournereau, exhibited by Dr. Hamy.

"Fuegians at the end of the seventeenth century," M. G. Marcel, from unpublished French documents (with vocabulary).

ARCHÆOLOGY.

"On some claims of the American Indians," Mr. S. B. Evans.

"Similarity in the decoration of pottery by means of textile imprints in Russia and North America," Prince Paul Poutjatine.

"Presentation of similar specimens from North America," Thomas Wilson.

"An essay of chronological classification of pre-Columbian monuments in America," Mons. Marcel Daly.

"Mexican archaeology," Dr. A. Peñafiel.

"Frescoes in the ancient palace of Mitla," Dr. Edward Seler.

"Archæologic studies in Salvador," Capt. F. de Montessus de Ballore.

"Petroglyphs on the Isthmus of Panama in Central America and the Greater and Lesser Antilles," M. A. L. Pinart.

"Ruins of Tlaluanaco," M. Thomas Ber.

LINGUISTICS.

"Negative relations between the languages of America and Polynesia," by Prof. G. Cora.

"Language of the Eskimos and its analogies," M. l'Abbé Petitot.

"Names of metals among different peoples in New Spain," M. le Comte Charency.

"Language 'Huege,'" by M. J. Altamirano.

"The plural terminations in the Nahuatl and other Mexican languages," Dr. V. Reyes.

"The Zapotècan and Mixtècan languages," Dr. E. Seler.

"Chontales and Populacas: A contribution to Mexican ethnography," Dr. D. G. Brinton.

"The indigenous names of certain localities on the Isthmus of Panama," M. Desiré Pector.

"The word 'Anahuac,'" Dr. E. Seler.

"Infixation in the Mosquito language," M. Lucien Adam.

"Affinities of the Maya," M. Leon Douay.

ETHNOGRAPHY ANNEX.

"The paleolithic period in North America," Dr. Thomas Wilson.

The report of this session of the congress, comprising, in all, one volume of 704 pages.

"Vocabulary of the Atanques language," "Bintukua vocabulary of the language," and "Roucuyenne language," Dr. R. Celedon.

"The Oyampi language," M. L. Adam.

"The Guarani language," Dr. C. Seybold.

"Sketch of grammar and vocabulary of the Baniva language," Mons. R. de la Grasserie.

"Fuegian vocabulary at the end of the eighteenth century," M. G. Marcel.

PALEOGRAPHY.

"Collection of figurative Mexican manuscripts, Collection Aubin," M. Auguste Genin.¹

"Codex Truano and Codex Cortesianus," M. J. de Dios de la Bada y Delgado.

"Codices and Calendars of Mexico and Central America," George Raynaud.

"Codex Poinsett," M. H. Phillips, jr.

NINTH SESSION. HUELVA, SPAIN, 1892.

It had been decided at the Paris session of the international congress of Americanists that the succeeding session of that body (the ninth) should be held at the port of Huelva, Spain, October 7 to 11, 1892. This was done from sentiment, this having been the port from which Columbus sailed on his voyage for the discovery of America. He had lived at the Convent of La Rabida in the immediate neighborhood during the preparation and construction of his fleet. It was determined by the Spaniards to make this the occasion of a grand celebration, and consequently there was a large attendance of the nobilities and grandees of Spain, with attendant ceremony. The president of honor was Señor Don Antonio Cánovas del Castillo, president of the council of ministers; the president in fact was Señor Don Antonio Maria Fabié, an ex-minister of Spain.

The Queen Regent and young King and all of the court were present, and the occasion seemed to be given up almost entirely to ceremony, celebration, and jollification.

Some of the meetings of the congress were well attended, but others

¹This relates to the preparation of the bibliography by M. Boban.

were indifferently so. The Queen Regent presided at one of the occasions, and great attention was paid to the honors rendered to her and the royal family, and to the members of the Government present. There was no attempt to devote the entire time of the sessions to science.

Despite the determination of former sessions of the congress concerning the origin of the name America, that the subject had been exhausted, and was not to be taken up in future discussions, many of the memoirs were devoted to that subject. The following memoirs and papers were presented:

HISTORY AND GEOGRAPHY.

"Origin of the name America, brief of argument," Eben Norton Horsford.

"Quelle est l'origine du nom d'Amérique?" M. l'Abbé Justin Gary.

"Colonasia: Memoria sobre el nombre de América," Sr. D. Arturo Baldasano y Topete.

"Observations sur les mots América, Amérique (et les homophones)," Mlle. Maria Lecocq.

"Inscription du nom indigène Amérique," M. Jules Marcou.

"Sur un livre imprimé à Lyon à propos de l'étimologie du nom de l'Amérique," Alexandre Poidebard.

"Les Sagas islandaises sur la découverte de l'Amérique," A. Fabricius.

"Christophe Colomb a-t-il eu des précurseurs?" M. Henri Jouan.

"Notas de actualidad," D. Francisco J. Delgado, oficial del archiv, general de Indias.

"Christophe Colomb d'après son écriture," M. P. Varinard.

"Descubrimiento de América: Bosquejo histórico-geográfico sobre el derrotero de Colón por las Bahamas y costa de Cuba, según las investigaciones," M. Lucas de Mileto.

"El nombre de América," M. Julio Febres Cordero, redactor de *El Lapis*, de Mérida (Venezuela).

"Christoforo Colomb," M. Charles Florentin Lorient.

"Los aborígenes que poblaban los territorios que hoy forman la República de Colombia en la época del descubrimiento de América," Da Soledad Acosta de Samper.

"Description d'un astrolabe arabe du VII^e siècle de l'hégire," J. de Rey Pailliade, délégué de la Société archéologique du Midi de la France et de la Société d'histoire naturelle.

"Peregrinación de los Aztecas y nombres geográficos indígenas de Sinaloa;" Monografía escrita por el licenciado de los Estados Unidos Mexicanos, D. Eustaquio Buelna.

"Quando fué descubierto el Río de la Plata?" Memoria leída en la sesión del domingo 9 de octubre de 1892, por el doctor de la República Argentina D. Angel Justiniano Carranza.

This closes the first volume (458 pages) of the proceedings, which was all ever printed. Senor Zaragoza, the secretary-general, died, leaving the work unfinished.

TENTH SESSION, STOCKHOLM, SWEDEN, 1894.

During the sessions of the congress at Huelva, Spain, offers were made to hold sessions in America. The name of Philadelphia was presented formally, and Chicago and San Francisco informally, but



E-19. MODELS ILLUSTRATING TRANSPORTATION OF THE MAILS, UNITED STATES POST-OFFICE DEPARTMENT.

there was disinclination on the part of the congress to hold a regular session or to transport the congress to the western side of the Atlantic; and various objections were raised thereto.¹

The city of Stockholm was accepted as the place of the reunion for the next (tenth) regular session, to be held from the 3d to the 8th of August, 1894, which was held in the Grand Salle de Palais de Noblesse. Twenty-three countries were represented; there were 286 subscribers, of which the major part were present. There were chosen as the presidents of honor, Baron Gustave Tamm, grand governor of the city of Stockholm; Prof. Rudolf Virchow, of Berlin, and the Baron A.-E. Nordenskiöld.

The congress proceeded to business without any loss of time through ceremony. Beginning with the address or communication from Prof. Oscar Montelius, the following (which are reported in one volume of 253 pages) were presented:

"Die Kulturentwicklung Amerikas im Vergleich mit derjenigen der alten Welt," M. Montelius, with discussion by M. Seler.

"Ueber die sociale Stellung des Khapak Inca," M. Seler.

"Recherches nouvelles dans les ruines et les tombeaux de Mesa Verde," M. Gustave Nordenskiöld, with discussions by MM. Seler, Retzius, and Virchow.

"The words 'Anahuac' and 'Nahuatl,'" M. Brinton, with discussion by M. Seler.

"Ueber neue Gräbenfunde aus Sudamerika," M. Virchow.

"Sur la disparition des Cliff-dwellers," M. Charnay.

"À la mémoire de Mme. Mary Hemenway," Madam Nuttall.

"L'Ancien Calendrier Mexicain," Madam Nuttall.

"Ueber Goldfunde aus Columbien," M. Seler.

"Studies in American ornamental art," M. Stolpe, with discussion by MM. Sommer and von den Stenen.

"The Indians of northwestern Mexico," M. Hartman, with discussion by M. Seler.

"Von den Südseefahrten der Franzosen im Anfang des 18 Jahrhunderts," M. Dahlgren.

"On the affinities of the Otomi language with Athabascan dialects," Dr. Daniel G. Brinton.

"L'historien Sahagun et les migrations mexicaines," M. le Cte. de Charency.

"Affinités lexicologiques du Haïtien et du Maya;" "Contribution à l'étude des noms indigènes des métaux en Amérique," and "Contribution à l'étude du drame Kechua Ollantay," M. Léon Douay.

"Ueber die Worte 'Anahuac' und 'Nauatl,'" "Nachträgliche Mittheilung," M. Ed. Seler.

ELEVENTH SESSION, CITY OF MEXICO, MEXICO, 1895.

The volume (of 576 pages) reporting this congress begins with these words:

El décimo Congreso Internacional de Americanistas, reunida en Estocolmo en agosto de 1894, acordó que se celebrara en la Ciudad de México un período extraordinario de sesiones en 1895.

¹An international congress of anthropology was held at Chicago in 1893, during the World's Exposition, but it was not under the authority of the European congress, nor did but few of those members attend it. It appears to have been a congress organized by the Exposition, and to have been held in connection with it.

This congress was convened on the 15th and continued until the 20th of October, 1895, under the presidency of Sr. Lic. D. Joaquin Baranda, secretario de estado y del despacho de justicia é instrucción pública.

Seventeen countries were represented, and there were 181 subscribers. The council of organization returned to the system adopted by some of the earlier sessions, of not only dividing the time of the congress among the various subjects of the science and appropriating certain sessions to each subject or division of subject, and of proposing questions under each division which should come in their regular order for discussion.

These divisions were as follows: (1) History and geography, (2) anthropology and ethnography, (3) archæology, (4) linguistics and paleography. The communications presented were as follows:

“Algo sobre el antiguo Chicomotoc ó Siete Cuevas,” Primera parte de la Memoria remitida de Zacatecas por el Sr. D. Elías Amador.

“Comercio, moneda y cambio de los antiguos pueblos de México,” Memoria remitida de Guadalajara por el Sr. J. W. Bastow.

Observaciones sobre las anteriores Memorias, por el Sr. Dr. Eduardo Seler.

“Breve estudio sobre la higiene de los antiguos pobladores de la Mesa Central,” por el Sr. Lic. D. Isidro Rojas.

“El hombre prehistórico en Mexico,” Memoria presentada por el Sr. D. Mariano Bárcena, profesor honorario de Paleontología en el Museo Nacional y director del Observatorio Meteorológico Central.

“Los libros de Anáhuac,” Memoria enviada por Sr. D. Francisco del Paso y Troncoso, director del Museo Nacional.

El Sr. Dr. Seler ofrece al Congreso su obra sobre Mitla, emitiendo con este motivo algunas observaciones los Sres. D. Leopoldo Batres y D. Antonio Peñafiel.

“División y clasificación de las lenguas y dialectos que usaron los antiguos habitantes del actual territorio mexicano. Su estado presente;” Memoria leída por su autor el Sr. Dr. D. Antonio Peñafiel.

“Descifración y comparación de jeroglíficos de las antiguas razas de México.—Su importancia.—Asunto para desertación formulado por la Comisión Mexicana Organizadora del XI Congreso de Americanistas,” Memoria leída por el mismo Sr. Dr. Peñafiel.

Extracto del discurso del Sr. Pbro. D. Augustin Hunt y Cortés sobre las excelencias de la Lengua Náhuatl y sobre la condición actual de la raza indígena.

El mismo Sr. Hunt presentó al Congreso los siguientes trabajos: “Fábulas de Esopo.—Traducción anónima al Náhuatl ó Mexicano, revisada y con su lexicología y sintaxis, moderna ortografía Náhuatl y traducción al castellano por Celtatécatl, fundador de la Academia de la Lengua Náhuatl de Texcoco, quien dedica este trabajo á los amantes de cosas de México, el Egipto del Nuevo Mundo.”

“Letanías de Nuestra Señora la Virgen María que se la cantan en su Santa Casa de Loreto, en Náhuatl o Mexicano y latín con su lexicología y sixtaxis.—Traducción de Celtatécatl, A. M. Hunt y Cortés, quien la dedica al Santo Padre Leon XIII.”

“Plegaria á Tonantzin (la Virgen de Guadalupe). Imitación del antiguo y clásico mexicano.”

“Oración Guadalupana del Illmo. Sr. Camacho en el idioma de Nezhualcoyotl.” Memoria del Sr. Ingeniero D. Luis Salazar, intitulada “La Arqueología y los Arquitectos.”

Observaciones del Sr. D. Leopoldo Batres sobre la anterior memoria y contestación del Sr. Salazar.

"Algunos puntos y objetos monumentales antiguos del Estado de Guanajuato (varios desconocidos)," Memoria leída por su autor el Sr. D. Pedro González, Representante del Estado de Guanajuato y Miembro del Congreso de Americanistas.

"La Atlántida y la Última Thule," Memoria leída por su autor el Sr. Lic. D. Eustaquio Buelna, Magistrado de la Suprema Corte de Justicia.

"El Comercio en Yucatan antes del Descubrimiento," Memoria del Illmo. Sr. D. Crescencio Carrillo y Ancona, Obispo de Yucatán.

"Valle y Ciudad de México durante el siglo XVI," Memoria leída por su autor el Sr. D. Ingeniero D. Antonio García Cubas.

"Disquisición histórica sobre la muerte de los frailes Juan de Tecto y Juan de Ahora," Memoria del Sr. Canónigo D. Vincente de P. Andrade; en francés, en inglés.

"Descripción de la Pirámide llamada 'Casa del Tepozteco,' perteneciente al pueblo de Tepoztlán, del Estado de Morelos, que fué descubierta por el arquitecto que suscribe y bajo cuya dirección se levantaron los planos respectivos en el período transcurrido del 12 al 31 de Agosto del presente año de 1895," Memoria leída por su autor el Sr. Arquitecto D. Francisco M. Rodríguez.

"Estudio Craneométrico zapoteca del Sr. Dr. D. Francisco Martínez Baca.

"Cliff dwellers in Arizona," Sr. H. S. Jacobs.

El Sr. Bartres, por medio de figuras reproducidas por la linterna mágica, emite algunas opiniones sobre los monumentos antiguos que se conservan en Yucatán.

El Sr. Dr. E. Seler manifiesta un parecer distinto de las opiniones antes espresadas.

"Disertación sobre el origen de los pobladores de América," Sr. D. Alejandro Ruiz Olavarrieta.

"Uso de la escritura jeroglífica por las Hiá-Hiú, en tiempos muy posteriores á la Conquista," Sr. Dr. D. Nicolás León, Representante de la Escuela Nacional de Agricultura.

"Memoria sobre etimologías mexicanas con una introducción en este idioma," Dr. D. Teodoro Juárez, ex-capitán de caballería de auxiliares del ejército mexicano.

El Sr. D. José María Vigil, director de la Biblioteca Nacional, informa al Congreso sobre la existencia de un antiguo manuscrito que contiene cantares en lengua mexicana y que existe en la referida biblioteca.

El Sr. Lic. D. Mariano Sánchez Santos lee la traducción castellana de dos de los cantares referidos.

"De los periódicos escritos en lenguas indígenas de América," Sr. Cesare Poma, encargado de la Legación de Italia.

El Sr. Pbro. D. Agustín Hunt y Cortés habla sobre etimologías mexicanas, y en seguida el Sr. D. Teodoro Juárez expone una opinión distinta sobre el origen de la palabra Teotihuacan.

"Plan general sobre Procedencia de los pueblos americanos u Cuenta Cronológica," Memoria remitida de Oaxaca por el Sr. D. Abraham Castellanos.

El Sr. Dr. D. Manuel Ortega y Reyes presenta algunas antigüedades de Oaxaca sobre las cuales disertó extensamente.

"Algo sobre el antiguo Chicomoztoc ó Siete Cuevas," Segunda parte de la Memoria remitida de Zacatecas por su autor el Sr. D. Elías Amador.

"Inmigraciones á la América en general y cuales hayan llegado al actual territorio mexicano," Memoria remitida de Alamos (Estado de Sonora), por su autor el Sr. Lic. D. Conrado Pérez Arando.

El Sr. Ingeniero D. Antonio García Cubas toma la palabra para rectificar una aserción contenida en la anterior memoria.

"Algunas observaciones sobre la Historia Natural Médica Azteca antes de la Conquista," Memoria remitida de Pachuca (Estado de Hidalgo), por su autor D. Joaquín Alatriste de Lope.

"Las leyes biológicas permiten asegurar que las razas primitivas de América son Autóctonas," Memoria leída por su autor el Sr. D. José Ramírez.

"Historia Natural aplicada de los antiguos Mexicanos," Memoria del Sr. Dr. D. Fernando Altamirano.

El Sr. Dr. Ortega y Reyes habla sobre algunas prácticas que tenían los antiguos Aztecas sobre medicina.

El Sr. H. S. Jacobs leyó la siguiente Memoria de que es autor: "Dead empires; The wonderful evidences of prehistoric life to be found in Mexico; Mexican archæology."

"Importancia de la Historia Natural en el estudio de la Historia Antigua y de la Arqueología Americanas," Memoria del Sr. Dr. D. Jesús Sánchez.

"Estudio folológico comparativo entre los idiomas Náhuatl y Huasteco," Memoria leída por su autor el Sr. D. Luis G. Alvarez y Guerrero.

El Sr. D. Mariano Sánchez Santos leyó la versión de un cantar antiguo mexicano.

Minería y su industria.—Páginas de la obra inédita "Los Indios Oaxaqueños y sus monumentos arqueológicos." Estudio remitido de Oaxaca por su autor el Sr. D. Manuel Martínez Gracida.

"Origen del nombre Yucatán." Memoria del Sr. D. Félix Ramos Duarte.

El Sr. Dr. E. Eduardo Seler hace algunas observaciones sobre la anterior memoria.

Comunicaciones del Gobierno de Veracruz á la Secretaría de Justicia, dando informes sobre algunas antigüedades que existen en aquel Estado.

Dictamen de la Comisión nombrada por el Consejo Central, sobre la manera de cumplir lo que previenen los arts. 3º y 19º de los Estatutos generales.

Programa á que deben sujetarse los trabajos ó memorias que se presenten en la próxima reunión del Congreso.

Nombramiento de la Comisión encargada de publicar los trabajos del Congress.

"La instrucción pública en el Territorio Mexicano durante el siglo XVI." Memoria remitida por su autor el Illmo. Sr. D. Fortino H. Vera, Obispo de Cuernavaca.

"The antiquity of the red race in America." Memoria remitida por su autor, el Sr. Th. Wilson.

"Guanajuato precolombino." Memoria leída por su autor, el Sr. Pbro. D. Ramón Valle.

El Sr. Batres presentó una colección de objetos antiguos, en su mayor parte de barro, hallados en las ruinas de Mitla.

Homenaje de respeto tributado á la memoria de los Americanistas muertos en los últimos tiempos.

"Esquisse grammaticale et vocabulaire de la langue Guaraouno." Mr. Lucien Adam.

"Premier envoi de M. Raoul de la Grasserie, docteur en droit, juge au tribunal civil de Rennes (France), correspondant du Ministère de l'instruction publique. 'Langue Auca.' Second envoi, 'Langue Yunga.'"

"Origine, progrès et caractères de la race caraïbe," by Mr. Charles Warren Currier.

"Sobre la manera probable de averiguar el origen de la raza de los Toltecas," Sr. F. P. Disseldorff.

"Minería y metalurgia entre los Aztecos." Dr. D. Joaquín J. Alatríste de Lope.

"Antiguo panteón indígena en el Estado de Coahuila." Sr. D. Elías Amador.

"Copias de manuscritos indígenas antiguos," recogidas por el Lic. Lauro Castañedo, para el Congreso de Americanistas.

"Un monumento prehistórico." Sr. D. Manuel Gama.

"Cacahuamilpa." Sr. D. Manuel Gama.

"Estudio filológico del nombre Lucayo ó Yucayo." Sr. D. Félix Ramón Duarte.

"Breve noticia referente á las ruinas del Carro del Borrego, jurisdicción de Monte Escobedo, Zacatecas." Sr. Alberto Aldaco.

"Sistema numérico de los antiguos habitantes de América." Dr. G. Rosado.

TWELFTH SESSION. PARIS, FRANCE, 1900.

The twelfth congress was held at Paris, September 17 to 22, 1900, during the Exposition of that year. Twelve countries were represented by official delegations.

The adherents, public and private, numbered as follows: Germany, 13; England, 2; Argentina, 12; Brazil, 3; Spain, 3; United States of America, 14; France, 55; Mexico, 11; Paraguay, 2; Peru, 4; Sweden, 3; Uruguay, 2; Belgium, Bolivia, United States of Colombia, Costa Rica, Denmark, Ecuador, Honduras, Italy, Nicaragua, Norway, Russia, and Switzerland, each, 1. Total, 137.

The Duc de Loubat was named honorary president, while the active officers were: President, Dr. E. T. Hamy; vice-president, Prince Roland Bonaparte; secretary-general, Dr. Henry Froidevaux; treasurer, M. Jules Hebert, with a council of fifteen members.

Many persons from the United States were registered, but did not attend or take part in the sessions. I am, therefore, compelled to depend on the official register:

M. Bickmore (Albert S.), curator of the department of public instruction (American Museum of Natural History, New York).

Mme. McClurg.

Mlle. Fletcher (Alice C.), Indian Bureau, Washington, D. C.

M. McGee (W J), ethnologist in charge, Bureau of Ethnology, Smithsonian Institution.

M. le Duc de Loubat.

M. Niederlein (Dr. Gustave), Philadelphia Commercial Museum.

Mme. Ward Kalm (Ruth), Newark, N. J.

M. Wilson (Thomas), professor, chief curator at the National Museum (section of prehistoric archaeology of Washington).

M. Bowditch (Charles Pickering), 28 State street, Boston, Mass., Bureau of American Republics, Washington, D. C.

Crocker (William H.).

Mme. Crocker.

M. Emerson (Alfred), professor of archæology, Ithaca, N. Y.

M. Inmann (Barnard C.), correspondent of the New York Tribune.

M. Kunz (George Frederick), secretary of the American Society of Numismatics and Archæology, 11-15 Union Square, New York.

MacCurdy (George Grant), professor at Yale University, 237 Church street, New Haven, Conn.

Hagar (Stanbury), 31 Nassau street, New York.

Vignaud (Henry), first secretary of the embassy of the United States, Paris.

The programme of proceedings was as follows:

Monday, September 17, afternoon, at the Collège de France:

OPENING SESSION.

Address of the president of the committee of organization; report of the secretary-general; responses of foreign delegates; nominations and election of officers.

Tuesday, September 18, morning, at the Exposition.

Visit to the sections of Latin-American countries, with M. Désiré Pector as leader. Rendezvous in the pavilion of the United States, Rue des Nations.

Afternoon, College of France:

Communications relative to anthropology and ethnography.

M. A. Deniker, "On the physical type of Americans in the light of recent discoveries."

The Duc de Loubat, "La letra de la danza de pluma," a poem of the Oaxaca Indians written in the Spanish language.

Dr. Ramirez, "L'Ololiuhqui (*Ipomœa sideaefolia*)."

Dr. Lehmann Nitsche, "Los Indios Takshik del Chaco Argentino."

Le Comte Henry de la Vaulx and Dr. Verneau, "The ancient inhabitants of the shores of the Colhue."

Reception by the municipal council at the Hôtel de Ville at 5 o'clock p. m.

Wednesday, September 19, morning, College of France:

ARCHÆOLOGY.

Mr. Thomas Wilson, "Recent researches on the epoch of the appearance of man, and on his presence in the Quarternary alluvium of North America."

Dr. E. T. Hamy, "The sculpture of the Haidahs."

Thomas Wilson, "Jade in prehistoric America."

Sr. Manuel Francisco Alvarez, "The ruins of Mitla in Mexico."

Juan B. Ambrosetti, "The ancient Calchaqui civilization (Republic Argentine)."

Afternoon, Museum of Natural History:

Visit to the anthropological collection, under the direction of Dr. Hamy; rendezvous 2.30 o'clock, Rue de Buffon, No. 2. Session in the anthropological lecture room.

Mme. McClurg, of Colorado, U. S. A., "Prehistoric pueblo country" (with lantern).

Mr. Stanbury Hagar, "The stellar chart of Salcamayhua" (with lantern); read by Dr. Thomas Wilson.

Thursday, September 20, afternoon, College of France:

HISTORY AND GEOGRAPHY.

Mr. J. B. Shipley, "Recent discoveries on the communication between Europe and America in the fifteenth century."

González de la Rosa, "Solution of the problems relative to the life of Christopher Columbus, and to the pretended inspirers of his discovery."

M. Henry Vignaud, "Toscanelli and Christopher Columbus."

M. Gabriel Marcel, "The French corsairs of the Antilles in the sixteenth century."

M. Henry Cordier, "Father Marquette."

Friday, September 21, morning, Exposition Universelle:

Visit to the sections of Greenland, Cuba, and Guadeloupe, under the direction of Dr. Hamy, MM. Guesde and Paul Labbé. Visit to the American gallery at the Musée du Trocadéro, under the direction of Dr. Hamy. Rendezvous, 9.30 o'clock, at the peristyle of the Musée d'Ethnographie.

Afternoon, College of France, 2.30 o'clock:

LINGUISTICS AND PALEOGRAPHY.

Le Comte de Charency, "Études algiques."

M. Lucien Adam, "The language of the Caingangs."

M. de la Grasserie, "On the native language of Costa Rica;" "On the native language of Patagonia."

Le Duc de Loubat, "List of manuscripts relating to Mexico preserved at the Library of Congress, Washington, D. C."

M. F. del Paso y Troncoso.

E. Seler.

Saturday, September 22, morning, 9.30 o'clock:

Mlle. Marie Lecocq, "Notes on comparative vocabulary of the American language. Records of the languages of the ancient world."

M. le Comte de Charency, "Evidences of a future life in Mexico, and Buddhist mythologies."

M. Henry Froidevaux, "A study of Father Fritz."

Saturday, September 22, afternoon, 3 o'clock:

Closing session. Adoption of new statutes.

REPORT ON THE CONGRESS OF ARCHÆOLOGY AND PREHISTORIC ANTHROPOLOGY.

By Dr. THOMAS WILSON,

Curator Prehistoric Archaeology, Smithsonian Institution.

The twelfth congress was called to order on the 20th of August at the Palais de Congr  s at the Universal Exposition at Paris, 1900, by the president, M. Alex. Bertrand, who delivered the opening discourse on the subject of "Progress in prehistoric studies." He said:

Remarkable researches had been made, upon which he congratulated many of the members present for their part. The problems relative to the origin of man had been brought upon ground more precise, less hypothetic, and more scientific than they had ever been before. He welcomed his colleagues from his own and foreign countries, and declared the twelfth session of the congress open.

The secretary-general, Dr. Verneau, made a report upon the affairs of the congress up to that time. He noticed the deaths, in the committee of organization, of Alphonse Milne-Edwards, General Pothier, and MM. Philippe Salmon and Georges Masson.

Professor Capellini, Count Brobinski, and Sir John Evans responded on behalf of the foreigners. M. Capellini was elected honorary president.

Two hundred and sixty persons had inscribed their names, of which 153 were foreigners; 24 persons were delegates of governments or scientific societies.

Many persons from the United States were registered, but did not attend or take part in the sessions. I am therefore compelled to depend on the official register:

Dorsey (Dr. G. A.), delegate of the Government of the United States, curator of the anthropological collections, Field Columbian Museum, Chicago, Ill.

Hough (Walter), assistant curator of United States National Museum (Smithsonian Institution), Washington, D. C.

Kunz (George F.), secretary and delegate of the American Society of Numismatics and Arch  ology, New York.

MacCurdy (George Grant), lecturer on prehistoric anthropology at Yale University, 237 Church street, New Haven, Conn.

Osborn, Mrs., 850 Madison avenue, New York.

Shepard (Edw. V.), civil engineer, Patent Office, Washington, D. C.

American Society of Numismatics and Archæology, New York.

Stevenson (Mrs. Sara Y.), 237 South Twenty-first street, Philadelphia, Pa.

Wilson (Thomas), delegate of the Government, chief curator of the National Museum, section of prehistoric archæology, Washington, D. C.

Wilson, Mrs.

SESSION OF AUGUST 21, MORNING.

[President, Sir John Evans; vice-president, M. Chantre.]

This session was opened by the presentation of papers by:

M. Rémond, entitled "Twelve hundred thousand years of humanity."

M. Josef Szombathy, "A skull of the race of Cro-Magnon, found in Moravia." The excavations in which this skull was found were carried on in 1881 in the cavern of Prince John, near Lautsch, in the neighborhood of the town of Littau. This cavern contained the bones of extinct animals and the fragments of chipped flint, shaped into the usual implements.

Thomas Wilson presented a résumé of a paper on "Prehistoric archæology in America."

Professor Virchow read a paper by M. Voss containing "Propositions for prehistoric cartography," which was much discussed and considerably opposed.

M. Beltz, director of the Grand Ducal Museum at Schwerin, presented "four charts or maps of Mecklenberg," whereon were figured the prehistoric discoveries made in his country belonging respectively to the ages of stone, bronze, and iron, and the proto-historic.

M. E. de Munck presented a communication, read by M. Dr. Capitan, on "The human occupation of the Plains of Hainaut during the quaternary geologic period;" while the same general subject was continued by M. Rutot "On the distribution of paleolithic industries in the quaternary deposits of Belgium." There was considerable protestation against the conclusions of M. Rutot, to all of which he replied: "Come and see the localities and the objects gathered there, now in the Museum of Natural History at Brussels."

SESSION OF AUGUST 21, AFTERNOON.

[Presidency of Baron de Loë.]

This session was opened by M. Thieullen, whose paper was entitled "Rognons of flint intentionally chipped at the epoch of the erosion of the valley." He presented before the congress specimens which had a certain resemblance to human and animal forms—human head, duck, fish, camel, or sheep. Against his views there were strong protestations and severe criticisms.

M. Schoetensack presented "A sculptured bone from the paleolithic cavern of Thayingen."

M. Hamy described "The cavern of Kakimbon, at Botoma, near Konakry (French Guinea)." The excavations were made in 1899 by MM. Roux and Albert Mouth, and the implements obtained, amounting to about seven hundred, belonged to the neolithic period.

Following this communication, M. Solomon Reinach presented a paper by M. Taramelli entitled "A study of certain stations of the stone age discovered in the Congo." The implements were found on the surface and were gathered during the construction of the railway from Matadi to Léopoldville.

Dr. Cancalon presented a petition to be sent to the minister of public instruction, praying him to take measures for the preservation of quaternary prehistoric stations. M. Solomon Reinach remarked that it was necessary to interdict unqualified persons from making excavations; that frequently they would only ravage them instead of making a scientific investigation. M. A. de Mortillet protested against this and

demanded for them complete liberty. Sometimes the simple amateurs make excellent excavations, he said. M. Boule insisted on the necessity of having competent persons to supervise excavations; MM. Cartailiac and Chauvet were of the same opinion. M. Manouvrier recalled how many archaeologists neglected prehistoric human bones. M. Montelius remarked that in Sweden it was necessary to have a special authorization to enable one to make archaeological investigations, and even then it should be done under the direction of the Museum of National Antiquities. The proposition was referred to the council.

L'Abbé Parat reported "The discovery of a human jawbone associated with bones of the cave bear, and a human industry equal to that of Moustier, and overlaid by a stratum of Magdelainien industry."

Professor Virchow, of Berlin, made report of "Certain hatchets of jadeite found in the region of the Hartz Mountains." They were likewise abundant around Brunswick. Such hatchets are often met there in the midst of a complete neolithic industry. Professor Virchow also presented a large shell found in the same neighborhood, which he said was a species from the Indian Ocean. M. de Mortillet said the former find was an argument in favor of the oriental origin of jadeite.

M. Laville: "The deposits in the neighborhood of Paris, and their relation to the paleolithic period."

The afternoon of the 22d of August was devoted to a visit to the Museum of St. Germain.

August 23, morning, visit to the Exposition, Museum d'Ethnographie, Trocadero.

SESSION OF 22D OF AUGUST, MORNING.

[Presidency of Mons. le Count Brobinskoy; M. Gaudry, honorary president.]

Prince Poutjatine, of Bolognoïë, Russia, presented an elaborate paper, going over the entire subject of prehistoric industries in his neighborhood and country, giving sometimes new divisions and new names. He presented many pieces of pottery which had been decorated by pressing basket work on the paste when soft.

M. Lehman Nitsche presented a memoir on "The fossil man of the Pampaen formation." The locality involved was the southern part of the Argentine Republic, and his demonstration was as to the contemporaneity of man and the extinct mylodon and typhotherium.

"The caverns in the valley of the Seine, of the Eure, and Yonne" were reported by L'Abbé Parat. Many of these have been excavated, and this contained a detailed account of each cavern.

SESSION OF AUGUST 23, AFTERNOON.

[Presidency of M. Piette.]

M. Montelius: "The prehistoric chronology of France."

M. l'Abbé Hermet: "Statue-menhirs of Aveyron, Tarne, and Herault." A series of these statues were published in the *Revue de l'Ecole d'Anthropologie*.

M. Dr. Capitan: "Divers instruments chelléens and acheuléens, comprised under the name of coup de poing."

M. Dr. Capitan: "The excavations made at Catenoy and at Campigny; their interpretation in regard to passage from paleolithic to neolithic."

M. A. de Mortillet: "The Campignien."

Mr. Schœttensack: "On the pretended batons de commandement."

August 24, morning: Visit to the collections of anthropology and paleontology of the Museum of Natural History, under the direction of Professors Hamy and Gaudry.

SESSION OF AUGUST 24, AFTERNOON.

[Presidency of Mr. Hoernes.]

The council reported back the proposition of Dr. Cancalon for the preservation of prehistoric caverns, amended by recommendation of a law for (1) the preservation of certain caverns inhabited by prehistoric man; (2) that, without interfering with rights of property, to follow the example existing more than two centuries in Sweden, interdicting archaeological excavations to all persons who are not provided with permission from competent administration, which latter will have surveillance over the excavation or work, and can retire the permit if it is abused. The proposition of the council was adopted—27 to 19 votes.

The city of Vienna was chosen for the next congress, to be held there in three years. The president of the Society of Anthropology of Vienna, with the Baron Adrien, MM. Hoernes, Szombathy, Hoermann, Heger, and Much, were appointed to form a committee of organization.

M. Ch. Maska presented "The paleolithic station at Predmost, Moravia, Austria." This station is said to be the richest and most important Quaternary station (paleolithic) in central Europe. It was explored from 1882 to 1894. The industry showed it to have been occupied by the hunters of the mammoth. The deposits were from 2 to 3 meters deep. The discovery included 20 undisturbed skeletons of Quaternary man, of which 14 were complete. The skulls were dolichocephalic, the superciliary arches were prominent, the teeth much used, the tibia highly platychemic, and from the measurement and comparison of the long bones one might conclude the man had a height of 1.80 meters. More than 15,000 tools and implements of the mousterien and magdalenien type were found, with many objects in ivory and bone; engraved bones, principally of the mammoth and reindeer, with pieces or slabs of schist. There was an enormous number of bones and teeth—2,000 molar teeth of the mammoth. The fauna consisted largely of extinct species; in addition to the mammoth and reindeer, the polar fox, wolf, the alpine hare, horse, glutton, polar bear, lion, bison, musk ox, etc.

Baron de Loe: "Discovery of lake dwellings in Belgium," in the valley of the Mandel, a small river in western Flanders, commune of Denterghem, near the town of Roulers. The pile dwellings were similar to the crannogs of Ireland. Several different prehistoric epochs were here represented. The earliest epoch, and that represented by the greatest number of objects, was the Robenhausen, or age of polished stone. The occupation, though, had continued through the bronze age and through the Roman and Merovingian epochs, and down to the Middle Ages.

M. Chil y Naranjo: "The age of stone in the Canary Islands." This age is represented in these islands by megalithic monuments, menhirs, cromlechs, and dolmens. The sepultures are formed of flagstones and stone cists; one of their peculiarities is a sort of pillow of rock on which the head of the corpse is laid. The implements and objects are such as usually belong to the age of polished stone. Some of the implements, principally polished hatchets, are reported by the author to be of chloro-melanite, said to be indigenous to the country. Many pintaderos—stamps of clay made in patterns, to be colored and stamped upon the body—were found. There are 130 specimens of these in the Canarian Museum.

Thomas Wilson: "Classification of arrowpoints and spearheads."

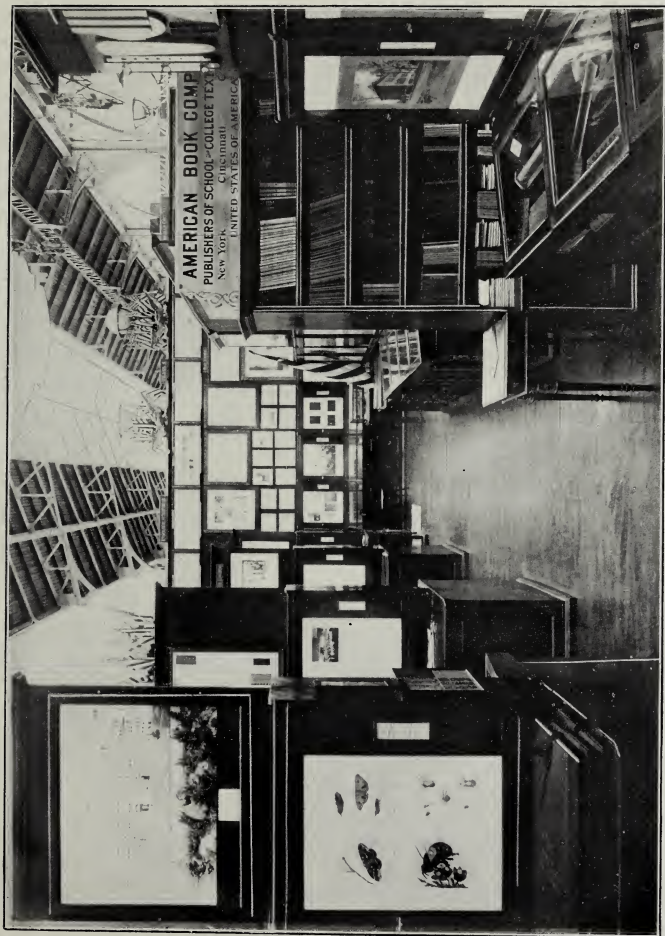
M. Lehmann-Nitsche: "Presentation of a collection of the remains of the *Grypothorium darwini* (var. *domesticum*)," found in Argentina, South America.

Mr. George Grant MacCurdy: "The razors of obsidian of the Aztecs."

Dr. Zenker: "Instruments and weapons of stone found in the diluvium of the Oder." Grave doubts were expressed concerning the artificiality of these.

M. Khovoïka: "New paleolithic discoveries at Kief."

Dr. Récey: "Prehistoric cemetery at Bakony, Hungary."



UNITED STATES EDUCATIONAL SECTION, SHOWING HARVARD UNIVERSITY EXHIBIT.

MM. De Capitan and Gentil: "Petrographic analysis applied to the study of stones employed for the fabrication of polished hatchets." This demonstration was made with projections of thin sections on the screen, which was given by M. Gentil in the amphitheater of geology at the Sorbonne.

SESSION OF AUGUST 25, MORNING.

[Presidency of M. Montelius.]

M. A. de Mortillet: "Excavations in the station of Cucuténi (neolithic), Roumania."

M. Volkov: "Premyecnien industry in the neolithic stations of the Ukraine." This was a report of excavations to the number of 65 on the borders of the river Bobryt-zia, an affluent of the Dnieper, in the government of Kief, made by M. Khovoïka during the summer of 1898. There were three different archæologic strata, the lower of which denoted the close of the neolithic period, of which there was an immense number of specimens; another strata, denominated premyecnien, contained also a large number of specimens, principally pottery, comprising vases, many in fragments, and idols of figurines, owl-shaped, etc. Mr. Khovoïka showed his finds at the congress at Kief last year, where they filled one hall. There was opportunity to compare these with similar objects found in the Ukraine and eastern Galicia, at Cucuténi, in Bosnia, Hungary, Bohemia, and Moravia. Their relation and the geographic division demonstrated the oriental origin of this civilization. Nevertheless the constant diminution as they came westward was evidence that there had been no migration of these people in this direction. There was much discussion over this interesting communication, most of which was favorable to the memoir.

Valdemir Schmidt: "Later discoveries in Denmark and in the Arctic possessions, notably those of prehistoric cereals, by M. Sarauw." Prehistoric researches are being continually made by the National Museum at Copenhagen. The scientists engaged comprise archæologists, botanists, and zoologists. Captain Brunn is occupied in these researches in Iceland. M. Sarauw is engaged upon the prehistoric cereals which he finds embedded in the pate of pottery and those attached to the bronze or iron implements. He has thus found grains of barley, wheat, millet, and rye.

Mr. George A. Dorsey: "The stone age in North America." The prehistoric ages of stone, copper, bronze, and iron do not exist in America in succession or by evolution from one to another. Stone, pottery, bone, and shell have been employed contemporaneously from the most ancient times. The peoples of certain localities are still in the age of stone and continue in its employment almost exclusively, whether for ordinary usage or for ceremonial purposes. The author has seen this among the Pima, the Arapaho, and the Hopi, all in the western parts of the United States. Two halls of the Field Columbia Museum at Chicago are filled with implements from the latter, and these are the same, whether ancient or modern. Mr. Dorsey described these implements and the ceremonies wherein they were used. His description was highly interesting, and was listened to with close attention. Sir John Evans felicitated the author upon his important communication. M. Montelius was of the opinion that prehistoric implements of bronze had been found in Mexico, if not in other parts of America. Dr. Verneau thought there was no doubt but that tin mines were exploited in America before Columbus.

M. Aveneau de la Grancière: "Passage from the neolithic age to the age of metal in America and specially in the department of Morbihan." The author affirms (1) that no hatchet of pure copper molded on the model of the polished stone hatchets has yet been found in Morbihan, nor even in all of western Brittany. They have found only a certain number of plaques of copper at Tourc'h (Finistère). No other objects have been associated with them. The most ancient forms of bronze are flat, thin hatchets and triangular poniards, triangular at the base, shoulder short and

provided with holes. The same cache will reveal an object of copper with tin or lead, and still another nothing but copper. Bronze was introduced little by little in Brittany, and often associated with stone. They found many sepultures in Finistère with neolithic instruments throughout, but with certain objects in bronze added thereto. The funeral furniture at the introduction of bronze is composed of poniards with blades flat and triangular, the hatchet being flat with slight edges thickened, often hammered, arrow points of flint, vases with handles, but no bronze hatchets à talon, nor with wings, nor yet with sockets. The epochs to which belonged the caches have no relation with those of these sepultures.

The second phase of the age of bronze in the sepultures with stone supports laid up dry and under a tumulus is characterized by the blades of poniards, longer and thicker, hatchets flat, with raised edges, lance and arrow points in bronze, poniards and handles in bronze with holes drilled for the handles.

The third phase of the age of bronze is characterized by the caches.

M. Hrouchevsky: "A prehistoric cemetery in eastern Galicia, Austria." This cemetery is situated near the village of Tchexhy, district of Brody. There were found 370 tombs of burials by inhumation and several scores by incineration. The bodies were not buried deeply. Implements to the number of 864 were found by the side of the skeletons—polished stone hatchets, hammer-hatchets, saws, knives, and arrow points. Bronze was employed to make pins, fibulæ, forks, bracelets, and rings. No weapons except arrow points. The same objects and ornaments were found in iron; two rings in silver.

M. De Capitan: "Large stone rings belonging to the neolithic period." The speaker called attention to the prehistoric rings of stone found in France. They measure from 10 to 15 centimeters in diameter, about 1 centimeter in thickness, with a hole in the center from 5 to 8 centimeters. One such is the ring of jadeite from Mane H'Roeck, two from Quiberon of nephrite at the Museum of St. Germain, one of serpentine from Corent at the Museum of Clermont-Ferrand, another at the Museum of Belfort, another at Volnay, and still another in the collection of Changarnier-Moissenet. M. Marchand, of Dijon, published a brochure in 1865, in which he gave a list of these, a total of 20. The author exhibited two in chloritic schist found at Tararou by Dr. Menard, who had given them to him. They were 16 or 17 centimeters in diameter, with an orifice of 7 centimeters. There exist in the Orient rings of identical form. The author showed one in jade from Japan. What was the usage of these rings in the Far East? M. De Capitan presented a little Japanese wooden statuette. A mantle hung across the back and over the breast was kept in place by a small ring of jade, a miniature of the large ring presented. Another such is figured on the breast of the high priest in the Mexican Ms. of the collection Aubin (Bohan). The question proposed by M. De Capitan was how to explain the identity of these rings of stone found in Japan, Mexico, and Gaul. Did they have a religious character, and if so, how explained? M. A. De Mortillet said these were bracelets, pure and simple, but this opinion was contested by several members of the congress.

SESSION OF AUGUST 25, AFTERNOON.

[Presidency of M. Cartailiac and Valdemir Schmidt.]

M. Chauvet: "Transition of polished stone to bronze." The author presented two large hatchets, flat, without borders, the edge enlarged to a half circle, 54 centimeters long, and width 65 and 115 millimeters, respectively. It was of copper, no tin, traces of lead, and was found near Jarnac, Charente.

M. Chauvet: "Prehistoric pottery, with intaglio geometric ornaments, from the valley of the Charente." M. Brobinskoy called attention to the great find of pottery in the south of the Caucasus, and belonging to the age of bronze or the first age of iron. It was ornamented with geometric designs, swastikas, human and animal

figures. By reason of these designs, some archaeologists have called it Assyrian. The ornamental lines were all intaglio, and, like many of those found by M. Chauvet, had been filled with a white substance (burnt bone reduced to powder).

M. Déchelette: "The excavations in Mont Beauvray at the end of the period of la Tène." The author had made these excavations and was of the opinion that the archaeological period of la Tène was susceptible of one or two subdivisions.

M. Reinach felicitated himself that archaeologists were beginning to recognize the triple division of the period of la Tène as proposed by the late Mr. Tischler. M. Reinach proposed to employ in the future the terms: La Tène I, la Tène II, and la Tène III. He added that la Tène III appeared to be separated from la Tène II in Gaul by the invasion of the Cimbriæ and the Teutons. Under menace, and because of this invasion, the Gauls, who before had been scattered among the villages, had commenced to unite themselves in the fortified places like Bribacte and other forts. This explains the uniformity of the civilization indicated by the implements found in these fortresses, as well as the technical uniformity of the methods employed for their fortification, employment of stone and wood, nails of iron, etc.

M. Hubert: "Discovery of a tomb with a buried car in the neighborhood of Nanterre (Seine)." The author described the objects from this tomb now in the Museum of St. Germain. His belief was that they belonged to the epoch of la Tène, remains of which are extremely rare in the west and center of France. What renders the objects more interesting is that those of iron are enameled. The tomb probably belongs to the II epoch of la Tène, of which the use of enamel by Champlévé is a characteristic.

M. Déchelette confirmed the conclusions of M. Hubert in attributing these enamels to la Tène II.

M. de Saint-Venant: "Ancient fortresses and fortified places in southeastern France." The author presented plans of many such places heretofore almost unknown. There were walls of stone laid up dry, parallel, and square, and thus afforded protection. Swords and fibulæ were found which serve in some instances to fix their date as belonging to the epoch of la Tène.

M. Reinach: "A necropole in Albania." The author called attention to a rich necropole near Scutari, explored by the French consul, M. De Grand. The objects found belonged to the third or fourth century A. D., and are all deposited in the Museum of St. Germain.

Mr. G. F. Kunz: "Discovery of a huge block of nephrite at Jordansmühl, Silesia." Jordansmühl is on the railroad to Breslau. This station has become celebrated as possessing a quarry of nephrite from which prehistoric implements were made, the first and, so far, the only one found in central Europe. Although exhausted, Mr. Kunz visited it for examination. He first obtained several blocks, each weighing 15 or 20 pounds, and then, working in the quarry, procured one about 6 feet long, 3 or 4 feet wide, and weighing 2,140 kilograms. It required 10 men to detach it, and was transported en bloc. It was surrounded by serpentine. The quarry had been used in prehistoric times. The block contained a greater volume than all the jade objects in all the collections of Europe.

Mr. Hough: "History of lightning."

SESSION OF AUGUST 26, MORNING.

[Presidency of M. Capellini.]

M. Flamaud: "The inscribed stones in northern Africa, especially in the region of d'In-Salah."

M. De Capitan: "Engraved stones in the Vosges." These were on the side of a mountain. They were weathered so as to be indistinct. Some were pecked, others

were scraped out. The designs were curious—two large crosses, one swastika, many cup-stones, several naked human feet.

M. Wilser: "Prehistoric migrations." The author presented the theory of the North being the cradle of the human race, and that the first migrations were toward the south—one branch, dolichocephalic, through Europe and Africa; the other, brachycephalic, through Asia.

M. Reinach scouted the author's theories, and asked of what utility they were.

M. Laville: "Five meters of modern deposits stratified." The author reported his excavations in the neighborhood of Paris, which was shown to have been all deposited within three or four centuries.

M. de Saint-Venant: "Chart indicating the distribution of the material and neolithic industry of Grand Pressigny." This distribution extended over nearly all parts of France into western Switzerland and Belgium. None had been found in other countries.

M. Valetic Vukasovic (de Raguse): "First traces among the southern Slavs of the seventeenth and eighteenth centuries."

M. Dumoutier: "Notes on the archaeology and paleo-ethnology of Japan." The author had explored several mounds in the island of Yezo. Hakodate possesses a considerable museum. Polished stone hatchets are called, in Japanese, *raino*, thunder hatchet. There are many objects of prehistoric times which resemble those in Europe and America.

Dr. L. Manouvrier: "Pithecanthropus erectus." Dr. Manouvrier premised his remarks with the statement that the reconstitution of the pithecanthropus at the Exposition, made by Dr. Du Bois, met his entire approbation, as, in fact, the first essay in that direction had been made by himself. The recent discovery of a third tooth and a fragment of jawbone from the same animal or kind of animal demonstrates that the hypothesis is correct. Dr. Manouvrier gave expression concerning further details of the reconstitution—those pertaining to the indo-cranienne imprints of the third frontal circonvolution, the insertion of the femur of the grand adducteur muscle, and the climbing ability of the pithecanthropus, arising from the simian form of the inferior members. He said he did not intend by any criticism of Dr. Du Bois, or difference with his conclusions, to diminish in any degree the importance of his discovery made in Java.

Dr. Duckworth: "The fractures of the bones of the Orango compared with the femoral lesion of the pithecanthropus."

M. Fabio Frassetto: "On the fontanels of the skulls of man, the primates, and of the mammals in general."

Dr. L. Manouvrier: "On the T. Sincipital." Dr. Manouvrier said there were six known skulls, all prehistoric, which present this lesion; three were in Paris and were presented; the three others belong to Mr. Perrier du Carne (Nantes); all were feminine, and came from a dolmen in the departement Seine-et-Oise. It was therefore a prehistoric mutilation. The mutilation is always in the form of a T, of which the stem is in the median line, while the transverse bar (the top of the T) is across the back of the skull.

M. R. H. Matthews: "The aborigines of Australia." This paper contained a résumé of the geology of the country.

M. N. Seeland: "The Russian peasant in western Siberia."

M. Jean Janko: "Magyar types."

M. Silva Telles: "Degeneration of the human race."

M. V. Giuffrida Ruggieri: "On the existence of parietal holes—more frequent among women than men."

M. Da Costa Ferreira: "On the capacity of Portuguese skulls."

M. G. Papillault: "The angles of the base of the skull."

Dr. Verneau: "A new cephalometer."

Mr. Grevers: "A compass with three branches, or legs, intended for craniometry."

APPENDIX.

INTERNATIONAL CONGRESSES OF ANTHROPOLOGY AND PREHISTORIC ARCHÆOLOGY.

In the year 1865 four scientific gentlemen of Europe interested in archæology and prehistoric anthropology, determined to attempt the foundation of an international congress of these sciences. Capellini, rector of the University at Bologna; Cornalia, director of the Museum at Milan; De Mortillet, assistant conservator of the Museum of Saint Germain; and the Abbé Stoppani, professor at Milan.

Their meeting was held at Spezzia in 1865. Cappellini was president, and he with the other three have been named "founders," and as such have been granted many privileges. A second meeting was held in 1866, at Neuchatel, and the congress finally became organized as international at its third meeting, in Paris, in 1867, where Mr. Edward Lartet was made president. A constitution or reglement was adopted, and the session from the 17th to the 30th of August was devoted to the discussion of anthropological and archæological questions.

The next (fourth) session was held at Norwich, England, under the presidency of Sir John Lubbock (now Lord Avebury).

The congress took high rank as a scientific organization, for it was a reunion of some of the most celebrated scientific gentlemen in Europe, who not only attended, but took prominent part in the proceedings. The vice-presidents were Broca, Huxley, Lyell, Nilsson, Tylor, and Carl Vogt. Colonel Lane-Fox (now General Pitt-Rivers) was secretary-general. The English secretaries were Bruce, Foote, Hughes; the foreign secretaries, Louis Lartet and Valdemir Schmidt, with a council consisting of Hooker, Busk, Hunt, Evans, Franks, and Flower.

Some of the more important subjects discussed were by Mr. E. R. Tylor, on the early history of mankind; Mr. John Stuart and Sir James Simpson, on sculptured rocks; Mr. Busk, on chipped-stone implements from the Cape of Good Hope; Delgado, of Portugal, on skulls and bones from caverns; Mr. Haywood, on the legends of ancient archers; Mr. Huxley, on the distribution of human races; Louis Lartet, with Broca, on human burials from the caverns of Perigord; Mr. Flower, prehistoric burials in Algeria; Sir John Evans on the fabrication of stone implements in prehistoric times.

An extended discussion followed, in which many eminent men participated, on the chipped-flint implements found in what was called "the drift." The president presented an extended memoir on the subject of prehistoric archæology, and along with it expressed his opinion on the age and purpose of the monuments at Stonehenge.

Sessions of the fifth congress were held in 1870 at Bologna, Italy, under the presidency of Count Gozzadini. Two hundred and forty members were present, representing, for the most part, Italy, France, Denmark, Sweden and Norway, Belgium, and Switzerland. Much interest attached to this congress on account of the opportunity to visit and study the two great prehistoric stations showing the latest phase of Etruscan civilization, Villanova, and Marzabotto.

The sixth congress convened at Brussels, Belgium, on the 22d of August, 1872, under the presidency of M. D'Omalius d'Halloy, between 500 and 600 members being registered. The proceedings of this congress were rendered specially interesting by the presentation, by Abbé Bourgeois, of specimens of flint from the tertiary deposit at Thenay, France, and precipitated the discussion on the question of the existence of man in the tertiary geologic period. The second question of interest was raised by M. E. Dupont, who described the many caverns occupied by prehistoric man on the rivers Meuse and Lesse, in southern Belgium, which had then been lately excavated by M. Dupont, and who conducted the members of the congress in a body to the localities, showing them the original deposits and implements. A visit was also made to the great neighboring neolithic flint quarry of Spiennes. One large volume of 600 pages was required to report the proceedings of the Congress. It was extensively illustrated with 90 plates and maps of the caverns and the implements.

The seventh congress (1874) was held at Stockholm, Sweden, and was the first ever held in that country, so rich in prehistoric antiquities, and which thus gave an ample opportunity for the study of prehistoric science. This opportunity was embraced and the congress was more largely attended than was any former one, while the memoirs and discussions took an equally wide range. There were over 1,400 persons who registered. The questions were divided according to the great epochs of the science: "Man during the Quaternary geologic period" had 10 papers and 9 disputants; "The Neolithic period," 20 papers and 13 disputants; "The age of bronze," 19 papers and 27 disputants; "The age of iron," 10 papers and 9 disputants; "Physical anthropology," 8 papers and 11 disputants, while miscellaneous subjects of anthropology had 11 papers and 30 disputants. The proceedings filled 1,020 pages, comprising two volumes. This congress is entitled to further notice because of the adoption of a report, presented by M. Chantre, on the signs to be employed on maps of prehistoric archaeology, showing the various kinds of monuments and stations and to what epoch they belonged.

The congress at Budapest opened September 4, 1876. Among its features was an exposition of archaeology where more than 31,000 specimens, carefully selected from public and private collections, were systematically arranged; an excellent illustrated catalogue was supplied the members. The archaeology of the region is quite peculiar. Some of the local bronze types—such as curious animal figures—and golden ornaments are particularly interesting. Pulsky was president. Of local papers, "Progress of prehistoric archaeology in Hungary," "The oldest traces of man in Austria," "Obsidian in Hungary," and "The age of copper" commanded attention. Of the general discussions, that by Broca, "Prehistoric trepanation," has become classical. The origin of the Tziganés (gypsies) was discussed. The excursions were exceptionally interesting, not only because they were to necropoli of somewhat peculiar type, but also because of the crowds of peasants, in native costumes and representing ethnic types, who everywhere formed a retinue to the congress. Native dances and popular sports proved as attractive to the guests as the elaborate plans of entertainment carried out by the management and the Government.

France, in organizing the next congress of archaeology and prehistoric anthropology, began the mode, since practiced by her, of having this and similar congresses assemble at Paris during an international exposition. The sessions were accordingly held at the Palace of the Trocadero, from the 16th to the 21st of August, 1878, during the Exposition of that year. The report of that session was inserted in the general reports of the Exposition and no special volume was issued.

The ninth congress was held at Lisbon in 1880, at which there were present delegations from 21 societies or educational organizations and 415 members, representing 19 countries. This was one of the most brilliant sessions, from a social point of view, held by this congress. Dinners, receptions, and galas were showered upon it, while banquets and fêtes from the King and at the palace and from all the royal societies and municipal organizations followed one another in rapid succession. The scientific labors of the congress were profound and interesting. The discussion with regard to the Tertiary epoch evolved 6 papers, with 19 disputants; the Quaternary epoch had 7 papers and 22 disputants; the Neolithic period, 7 papers and 13 disputants; the age of bronze, 3 papers and 15 disputants, while anthropology and subjects not assigned to any particular epoch required 16 papers and had 31 disputants. The proceedings were reported in a volume of 723 pages, with 49 plates.

The tenth congress was held at Paris in 1889, on the occasion of the International Exposition of that year, under the presidency of M. de Quatrefages, of Paris. As might be expected, there were representatives from nearly every country in the world. Questions were propounded by the committee of organization, involving live subjects relating to the science, and a reporter chosen who should make the opening and principal argument. This was done in the form of a memoir or paper.

The following questions were presented: (1) "The erosion and filling of the valleys and of the caverns, and their relations to the antiquity of man," by M. Gaudry, reporter; (2) the same, with their relations to the glacial phenomena, by M. Geikie; (3) "Art during the cavern period, and the domestication of the reindeer," by M. Piette; (4) "The transition between the epoch of the caverns and the Neolithic age," also by M. Piette; (5) "Relations between the civilization of Hallstadt and other stations on the Danube, and the civilizations of Mycenæ, Tiryns, Hissarlik, and the Caucasus," by M. Solomon Reinach and Dr. Schliemann; (6) "An examination of human bones and skulls from the Quaternary deposits; ethnic elements proper to ages of stone, bronze, and iron, and the men of Spy," by M. Fraipont; (7) "Ethnographic survivals which will throw light on the social state of primitive populations of central and western Europe; the stone age in Australia," by Lumholtz; and "The Swastika," by Zmigrodzki; (8) "Prehistoric migrations," by M. Ernst and others.

Questions not proposed by the committee: Tertiary man, prehistoric researches in the Iberian peninsula, flint workshops and quarries, cupstones, caverns as places of refuge, redskins, craniometry. Nineteen countries were represented by persons specially appointed, while the individual adherents (subscribers) were 473. There was much interest manifested in the workings of the congress, and the value and importance of the papers were great. This congress was attended by many of the most learned anthropologists and archaeologists in each country, nearly all of whom were present every session and took part in the discussion of most of the questions.

The eleventh congress was held at Moscow, Russia, from the 1st to the 8th of August, 1892. The presence of cholera in Europe prevented any large attendance, and the proceedings were principally, though not entirely, confined to the Russian contingent. The anthropology and archaeology of that country and the eastern part of Europe has not been studied very profoundly by foreigners, and the manifestations are so different there from those in western Europe as to give ample opportunity for the Russian scientists to present and read papers and have discussions upon these subjects to their own satisfaction. One section of the investigation of the congress was devoted to "Kourganés et goroditchésches." With all this, it is still true that the epochs of prehistoric occupation were much the same as in other parts of Europe; the Paleolithic, Neolithic, ages of bronze and iron were the same there as elsewhere, though there were many tools, implements, and monuments which were different and required serious detailed investigation.

FIFTH INTERNATIONAL CONGRESS OF ARCHITECTS.

By W. L. B. JENNEY,

Architect, United States Delegate.

The fifth international congress of architects held their meetings at Paris, under the auspices of the minister of public instruction and of fine arts of France, from the 30th of July to the 5th of August, both inclusive. The first meeting was in the famous Hemicycle of the Ecole des Beaux Arts, Monday, July 30. This congress of architects was one of the 500 congresses of professions, trades, and commercial interests that were held at Paris during the Exposition, and numbered among its delegates many of the most celebrated architects and engineers of the world.

The first meeting was largely devoted to organization. In the vestibule of the school was exhibited a large number of very fine draw-

ings by former scholars. On looking over these drawings I noticed particularly that more extensive use was made of the lead pencil in connection with the water colors and ink than is usually employed in this country, particularly in the decorative portions, mural decoration, and sculpture.

The afternoon meeting was held in the same place, the programme commencing with the question, much discussed, particularly in Europe, of how the architect can be protected in his work and preserve an exclusive ownership of the design of the buildings he erects and the designs that he makes. This question has been discussed at almost if not all the previous congresses, and to it the European architects attach a great deal of importance. The conclusion was that every country should endeavor to obtain such legislation as would give to the architect such ownership for his designs as the authors receive for their books or an inventor by his patent.

In the evening the members of the congress were given a reception in the great Festal Hall of the new Orleans Depot. This new depot, which at this moment is scarcely finished, is exceedingly fine. The exterior, of light Caen stone decorated with sculpture, is decidedly effective. At one end is a large hotel, probably the finest in the city of Paris, where there are rooms such as we are accustomed to in America, with bathrooms, wardrobes, closets, etc., and for which they charge \$6 a day for a room only, with service and light. This Festal Hall is a splendid room of the high palatial type worthy of Louis XIV, and resembles very closely a banquet hall or throne room of his time.

In the evening a reception had been announced for us at the Hôtel de Ville by the city of Paris. The unfortunate assassination of the King of Italy occurring just at this time, the reception as well as a garden party to be given by the President were omitted.

Wednesday the congress again assembled at the Hemicycle and listened to papers on architectural instruction in the schools, and the conferring of the title of architect in different countries.

Thursday, August 2, the congress again assembled at the Hemicycle and discussed the question of habitations at cheap prices in all countries and the foundations on compressible soil.

Friday, August 3, again assembled at the Hemicycle and discussed the question of the preservation of monuments and the influence of administrative regulation upon private architecture, and also listened to papers on the steel skeleton construction of America.

On Saturday, August 4, the congress assembled at the Palais des Congrès at the Exposition. It terminated in fixing the date three years hence at the city of Madrid, Spain, for the next congress. In the evening there was a grand banquet at the Continental Hotel.

In regard to the discussions of the papers I will give briefly a few points:

In regard to the "ownership by architects"—that is, drawings and the right to reproduce buildings—all the members were urged to obtain legislative enactments, each in his own country, that would give to them complete ownership of the drawings and of the design of the work that they had created, and prohibit their being copied without the authorization of the author. This same resolution has been passed at each previous congress, with as yet small results.

On the "Instruction of architecture" there were able papers by M. Pillet, architect, professor at the École des Beaux-Arts; also on higher architectural studies by J. Otzen, Geheimerath, of the Royal Academy of Berlin.

On "Compression of the soil" there was a paper by Ducloux. It considered the raising of a heavy weight of conical shape by a derrick to a considerable height, where it was released and fell into the ground, making a depression; this was repeated over and over again. The pit thus made was filled with concrete, which was rammed into place also by falling weights. This system has no doubt an advantageous application in compressible soil of great depth and of proper consistency.

The preservation of historical monuments.—This question was discussed by numerous architects. All those present seemed to agree that what was there termed a "pious restoration" was the only way advisable, and condemned most seriously those architects who had presumed to restore, other than to reproduce exactly, as far as they were able, the work as it was originally. They also condemned the principles of the English society who would put their historical buildings under guard and forbid them being touched by anyone. If they decay, so much the worse, but this the society considers far better than any replacing of decayed material, and once when the society made a visit to an old castle that was but a shapeless mass of ruins, they shook hands, congratulating themselves that they had at last found a building that had not been restored. On the other hand, in France the Castle of Blois and many of the French historical monuments have been restored to exactly their original condition. All agreed that the "pious restoration" is the one thing to be desired and that the buildings should be carefully watched and protected in every possible way, the joints kept well filled, no leaks allowed, and that the moment any decay appeared it should be restored.

Steel skeleton construction.—There was a paper by W. L. B. Jenney, of Chicago, on the steel skeleton, and another by a professor of architecture in Columbia College, read by Mr. Totten, of Washington, on the exterior of the architecture of steel skeleton constructions. These papers were illustrated by numerous lantern slides and were received with much interest, and at the end Mr. Jenney was requested to conduct a party to the Exposition to explain to them an exhibition in the Civil Engineering Department of a model by the George A. Fuller

Company of one of the tall office buildings they had constructed at New York from the designs of Cass Gilbert.

"Habitations at a low price in all countries" received considerable attention. There was a paper by a British architect in English, and afterwards one by Charles Lucas, who has recently published a volume of considerable dimension on this subject. There was a paper in German and another in Spanish.

There was also a paper on the "Position of women in architecture," by Mrs. Frank Fuller, of Chicago, official delegate of the United States. Mrs. Fuller stated that in the prehistoric age it was woman who first felt the need of a protection from the elements and who sought shelter in the caves. In the construction of the tents and the hut woman took an active part. It was much the same in the manufacture of pottery. Recently in Greenland women have been employed on buildings and on constructions—military, naval, and domestic, in building boats and blockhouses. The wigwam is entirely the work of the Indian women. In Europe the two de Medici and Blanche de Castile and others exercised a very important influence on architecture in the building of palaces and castles. In 1880 the Institute of Technology in the United States admitted women to their classes; there were at first but three, to-day there are some fifteen women in the architectural class. In 1899 a woman, a Miss Charles, succeeded in obtaining admission to the Royal Institute of British Architects after an amendment to its constitution.

There are two arguments against women architects: First, they take from the men the means of gaining a livelihood. Second, they are unable to superintend exterior work. The first objection is unworthy of consideration. For the second, the older architects and those with much work seldom or never climb ladders to superintend the construction. They employ special assistants as superintendents and receive their reports.

In America architects are obliged to pass with credit very severe examinations in order to obtain a diploma as architect. No woman has ever been refused a diploma who has passed a successful examination. There are ten schools having a department of architecture; seven of these admit both sexes on the same footing. The faculty have faith in a successful future for their female students, particularly for office work. At the Exposition at Chicago a young woman, Miss Sophie Hayden, of Boston, was architect of the Woman's Building. She obtained the first prize in a public competition for women. She had obtained a diploma at the School of Technology at Boston.

The public still hesitates to place important commercial and public buildings in the hands of female architects, but they are willing to accept their services for private residences. There were present at the congress from the United States the following delegates: Glenn Brown, of Washington; George Totten, of Washington; Joseph C.

Hornblower, of Washington; Robert Stead, of Washington; W. L. B. Jenney, of Chicago, and Mrs. Frank Fuller, of Chicago.

The names of thirteen other American delegates were published in the preliminary announcement of the congress, but I did not meet them at the meetings.

CONGRESS OF NAVAL ARCHITECTURE.

An international congress of naval architecture and construction was held, under the patronage of the French Government, in the Palais des Congrès of the Exposition of 1900, opening on the 19th of July and lasting three days. This congress was of interest to engineers and constructors of ships, and of motor and mechanical apparatus of every kind employed in ships, to the manufacturers of material and objects of whatever kind that may be used, either in naval construction or in yards and workshops, to sailors, shipowners, and yachtsmen, and to everyone in any way concerned in the progress of maritime locomotion.

The questions coming under the consideration of the congress were divided among six sections, without excluding other communications that belong to the art of naval construction:

SEC. A. *Naval architecture*.—Geometry and statics of ship, stability; theory of waves and swell, sea-waves; roll and pitch in calm and swell; resistance of keels at sea, and in rivers and canals; turning, effects produced by helm; propelling; vibration of hull.

SEC. B. *Construction of hulls*.—Materials of construction; disposition and tools of construction yards and shops; processes for using materials, corresponding applications of electricity; plan drawing; putting together of frame; accessories of hull, equipments; internal arrangements; masts, sails, and rigging; protection of keels; various applications of electricity to services on board.

SEC. C. *Machine construction*.—Materials; steam generators, mode of construction and working; accessories; steam, petroleum, and electric motors, used either for propulsion or for other purposes; economic rendering of generators and motors; propellers.

SEC. D. *Special dispositions for various classes of vessels*.—Transportation, freight, passengers; pleasure, racing, sail and steam vessels; war ships, offensive and defensive arrangements; submarine vessels.

SEC. E. *Heavy outfitting of ports*.—Repairing basins; towing slips, floating docks; lifting apparatus, fixed and floating masts and cranes; material for floating ships.

SEC. F. *Miscellaneous*.—History of the progress of naval architecture, development of merchant, pleasure, and war ships; great construction yards and industrial centers of naval construction; organization, economical situation, and recruiting of different sets of employees of naval construction, professional schools, various methods of work; naval tactics and strategy.

CONGRESS ON BASQUE STUDIES.

The Société d'Etudes Basques undertook the organization of an international congress of all persons interested in the Basque question. This congress was accepted in the series of official congresses of the Expo-

sition of 1900, and was held, under the patronage of the French Government, from the 2d to the 5th of September, 1900. Questions concerning the Basques have long been discussed with keen interest by the scholars of Europe and America, and they concern deeply the history of humanity. The organization committee made an appeal for the success of the congress to all Basques and Bascophils, to historians, philologists, ethnographers, and folk-lorists. The work of the congress has been divided as follows:

1. Language: Grammar, origin, epigraphy, dialects, etc.
2. Race: Ethnography, customs, domestic institutions.
3. Work: Monuments, "Fueros" arts, agriculture.
4. Bibliography: Plans, maps, photographs, etc.

The committee especially desired that the following questions should be treated with some completeness, and invited competent scholars to present special reports, which were the basis of discussion. These reports were brief, and were printed and distributed to the members before the opening of the congress:

- First. Epigraphy—study of Iberian inscriptions.
- Second. Grammatical prefixes and suffixes.
- Third. Editing of vocabularies gathered in separate villages for the study of region dialects and local varieties.
- Fourth. Investigation and study of Basque topographical names.
- Fifth. Change of Basque language in Basque colonies abroad.
- Sixth. Origin of the Basque-Atlantis.
- Seventh. Investigation of traces of ancient traces.
- Eighth. Basque voyagers before the fifteenth century.
- Ninth. Study of Basque anthropology.
- Tenth. Cultivation of the apple and making of cider in the Basque country—its origin and influence.
- Eleventh. Agriculture, forests, and pastures of Basque country.
- Twelfth. Basque music.

A committee of patronage of the propaganda were named among foreign scholars; a prominent American member was Mr. Ignatius Donnelly, author of "Atlantis," New York. The president of the French organizing committee was M. Julien Vinson, professor at the School of Model Oriental Languages (Hindustani), 2 Rue de Lille, Paris.

REPORT ON THE CONGRESS OF BEE CULTURE.

By C. P. DADENT.

Having been appointed delegate for the United States National Bee-Keepers' Association to the above-named congress, and also delegate from the State of Illinois to the International Exposition, I left for Europe in July and spent a portion of my time visiting among French and Swiss bee keepers.

The international congress, held September 10, 11, and 12, had a very elaborate programme, of which I will give only a synopsis. As



MAIN PORTAL. FAÇADE OF AGRICULTURAL SECTION, CHAMP DE MARS.

is usually the case with congresses having a plethoric programme, it was found impossible to read all the essays and reports furnished by apiarists, and only a small portion of these were read, the greater part of the time being occupied with the discussions of questions which took prominence.

The president was Mr. Gaston Bonnier, professor of botany at the Sorbonne; the vice-president, M. Sevalle, editor of *L'Apiculteur* of Paris; secretary, E. Caillas; recording secretary, L'abbé Iches.

The foreign representatives present were the following: Belgium, DeLalieux de la Rocq; Hungary, Baron Bela Ambrozy; Russia, Prince Gagarine, M. Kojevnikov; Argentine Republic, Enrique M. Nelson; Syria, M. Bassler; Carniola, M. Rojina; Luxemburg, M. Hemmer; Roumania, M. Locusteanu; Spain, M. Gorria; Italy, L. Sartori, Dr. Emilio Triaca; Great Britain, M. Taylor; Peru, H. Yzcue; United States, C. P. Dadent, J. T. Calvert, J. Bodenschatz.

The programme was divided into seven sections, as follows:

First section.—Chairman, G. Bonnier; secretaries, Messrs. Caillas and Depaire (Belgium). List of subjects: Advantages to agriculture from bee culture, fecundation of blossoms by bees; Researches on the most favorable methods of marketing the products of the hives; Influence of the soil, of climate, of altitude, on the production of nectar in the blossoms; Means of supplying artificial flora for honey production in inferior honey-producing regions; Rearing of bees for selection and for the sale of swarms; Bee culture for profit; Advantages and disadvantages of feeding; The making of mead, metheglin, and report on ferments.

Second section.—Chairman, M. Kojenikow (Moscow); secretary, M. Clement. Influence of drones in the hive; Parthenogenesis; Length of tongues of bees.

Third section.—Chairman, M. Beuve; secretary, M. Zwilling (Alsace). Discussions on bee-hives.

Fourth section.—Chairman, Laurent-Opin; secretary, M. Wathelet (Belgium). Apiarian education and publications.

Fifth section.—Chairman, M. Duchatelle; secretary, M. Champion. Foul brood, its detection and cure; Prevention; Parasites of bees.

Sixth section.—Chairman, M. Appay; secretary, M. Dendler (Alsace). Legislation concerning bee culture.

Seventh section.—Chairman, M. Brunet; secretary, M. Hommell. Reports on bee culture from different countries.

I am sorry to say that I have not yet received the report of the secretary of the association, which was to be printed, and upon which I counted to enable me to make a full statement of the discussions and motions passed. I will, therefore, have to make a very short review of the main questions brought to light.

In the first section, the subject which attracted the most animated discussions was the making of metheglin, and wines composed in toto or in part of honey. In all European countries fermented beverages are used regularly at meal time by the great majority of the people, and it has been evidenced that this consumption of alcoholic drinks at meals is rather a preventive than an incentive of drunkenness, because the alcohol mixes with the food and helps digestion instead of being

at once mixed with the blood and sent to the extremities of the body when taken on an empty stomach. It was universally thought that even inferior honey could be made into an excellent metheglin, with all the properties of good white wine, if it was made with the help of wine ferment (levure). Samples were exhibited coming from different parts of the country, which were almost absolutely similar, from the fact of their having been prepared with the same levures. The levure of Sauterne wine, prepared by chemists, from the lees of selected Sauterne wines, was particularly brought into prominence. The metheglins made from honey and water, with the sole addition of enough grape juice to commence fermentation, were also described, and such drinks were compared to the rich wines of Malaga and Oporto. The metheglin which was awarded the gold medal at the Exposition was sampled, and the producer of this beverage reported the manner of making it. It was composed of equal parts of honey and sugar, in quantities of about 4 pounds to the gallon of water, with a slight addition of good wine.

On the production and sales of honey a unanimous resolution was passed to request all governments to pass laws for the protection of pure honey by the punishment of sellers of adulterated honey, as is already done in most countries in the sale of butter adulterated with margarin. It was also resolved that it was advisable for all apiarian associations to establish exhibits of bee products at fairs, with special arrangements for the sale of honey. I must say that in this matter the United States have been rather behind. Canada had a very fine exhibit of honey, which was brought to Paris by their national association, while in the United States the matter was left to personal enterprise, and the result was a total failure of honey exhibits from this country. We are in a position to make the very finest exhibit in this line that any nation can make, for the State of California alone is probably the best honey-producing region in the world.

The influence of a great number of drones upon the results of the honey crop was one of the most interesting subjects. It has lately been held by progressive bee keepers, in many parts of the world, that it is advisable to restrict the rearing of drones in the hives, especially in large apiaries. It is held that the instinctive tendency to the rearing of many drones by each colony of bees is due to the fact that the young queens mate in the air, on the wing, and that there is a necessity for a great number of drones, so that the young female may not incur too many dangers by a protracted flight. But under domestication, dozens of hives are kept in one location, and the few thousand drones reared by a single hive are evidently sufficient to secure the fertilization of all the young queens, since only one queen is reared for each additional hive. An attempt was made to prove that the drones were efficient in keeping the hive warm, but the very fact that they

are reared only in warm weather makes this argument well-nigh void. One very interesting experiment was made which, although not altogether conclusive, still shows that there is a decided advantage in decreasing the number of drone combs, so that there may not be raised an excess of them. One apiarist reported having weighed eight hives of average strength, four that produced few drones and four with plenty of drones, and the gain in weight of the four hives with few drones over the four others amounted to 7 kilograms or about 15½ pounds. Accepting even this small advantage as a fair average, it would appear that the gain in honey made by replacing the greater proportion of drone combs in a hive with worker combs would be an average of 4 pounds per year. It is fair to assume that the average surface of drone comb, thus to be removed and replaced by worker comb or comb foundations, would not exceed 1 square foot per colony. So, by following this induction, we find that the supplying of 1 square foot of comb foundation, worth about 8 cents to each hive, with, say, 5 cents additional for the labor of putting it in, or a total of 13 cents, would be productive of an economy of 4 pounds of honey, which, at 10 cents per pound, would make a net saving of 27 cents the first year. But, as the supplying of this worker comb is permanent in the hive, it is very easy to perceive the great advantage secured from this removal of drone combs.

On the other hand, the discussions elicited the fact that it was the almost unanimous opinion of the delegates that it is important to rear the bulk of the drones for reproducing purposes, only in the very best hives, and the incalculable advantages to be derived from this artificial selection were thought to be so great that a motion was passed to recommend the removal of drone combs and replacing of it by worker combs in all but the most profitable colonies.

I desire personally to say that I consider this a very important question, and I wish that all apiarists to carefully study this matter.

In the matter of queen rearing, the American methods, which, by the way, seem to be in the lead in bee culture, achieved a very nice success by the exhibit before the Congress of the Doolittle method of queen rearing, inaugurated not long ago by one of our leading apiarists, Mr. G. M. Doolittle, of Borodino, N. Y. An exhibitor brought a frame covered with queen cells formed by this method, and reported his success in rearing 314 young queens from one prolific and desirable queen in a single season; all these queen cells having been brought to the hatching point in that single hive. As a description of his *modus operandi* would entail a description of the Doolittle method from beginning to end, I will refer those who desire to become acquainted with the method to the above-mentioned gentleman, whose address I gave.

In the matter of apiarian education, more is needed for Europe than

here, because the peasants of Europe take less pains to become informed than our farmers do, and ignorance of the most elementary entomological facts is very common. But it must be acknowledged, to the credit of the enlightened classes, that they take great pains to secure teachers in all branches of economic farming, and their scientific experiments are conducted in a very careful manner. It would not be amiss for us to examine the question of conforming with the motion passed by this congress, and which read as follows:

Be it resolved, That we recommend that all governments introduce the teaching of apiculture in their colonies, in their experimental farms, in their normal schools, in their agricultural schools, and in the colleges and seminaries. We recommend also the hiring of regional professors of apiculture.

The question of foul brood, its prevention and cure, was somewhat discussed, and although many present had never seen a case of the disease, which is undoubtedly not very common, those who had had this contagious disease in their apiaries were so convinced of the necessity of stringent measures that it was with difficulty that they were prevented from asking for a resolution that the association advised all who had foul broody colonies to destroy the bees by fire. The general opinion was that this was the only absolutely safe course to pursue; but such drastic measures would never give an opportunity for curing the disease by scientific methods, and some of the latter have already proven successful, though not universally so. Although little or no action was taken, the trend of the discussion showed that the following measures ought to be taken by local governments for the prevention of the spread of this dangerous disease: The appointment of inspectors in each nation to act in the same manner as for the prevention of contagious diseases in farm animals of large size; the selection for such appointments of men who would be sufficiently informed to not mistake ordinary diseases with the real foul brood, since the latter is the only known contagious disease, and the indiscriminate treatment of apiaries in cases of ordinary chilled brood would be obnoxious and useless.

The parasites of the honeybee were but little mentioned. Since the invention of the movable-frame hive, it has been ascertained that the bee moth was dangerous only to careless apiarists who allow some of their hives to become queenless and to die without help. The only other parasite worthy of mention is the *braula-cæca*, or bee louse, and, although it exists in Europe, it is not injurious.

The next and last section consisted in the reports furnished by foreign governments of statistics in bee culture. These were only passed over in a general way, one after another, but I was highly pleased to see that the one from our own country, furnished by the Department of Agriculture, if I remember rightly, was the most voluminous of all. The sum total of my observations is that our United States hold

a most prominent position among the countries of the world in the pursuit of bee culture, and it behooves us to make united efforts for important exhibits of the products of the bee at all international exhibitions in order to properly foster the exportation and sale of our surplus production in this as in many other lines.

It was decided that the next international congress would take place in 1903 at Bois-le-Duc, Holland.

CONGRESS OF BEVERAGE-YIELDING FRUITS.

The congress of beverage-yielding fruits met at Paris, October 11 to 13. The cider industry recently developed in France is assuming great importance as an industry, and unusual interest was manifested in this congress. New experiments are continually being tried in all the apple-growing regions of France, and the reports of growers and manufacturers were of considerable interest, especially to European countries. The general outline of the discussion was as follows:

1. The growing and planting of apples for the making of cider.
2. Use of compost in growing beverage-yielding fruits.
3. Means of determining the best varieties of apples for cider making.
4. Study of the apples grown in the principal cider districts.
5. Blights and insects injurious to the apples, and their treatment.
6. Drying and preservation of cider apples.
7. Experimental orchards and pomological stations.
8. Study of pomology and allied sciences.
9. Extracting, filtering, and sterilizing the must.
10. Use of yeast in the manufacture of cider.
11. Manufacture of bottled cider.
12. Storing the beverage; barrels and cisterns.
13. The alcohol in cider.
14. Trade in cider and cider-bearing fruits in France and elsewhere.

THE CONGRESS OF BIBLIOGRAPHY.

The congress of bibliography met in Paris August 16 and closed on August 18. The deliberations of the body were confined to the subject of pure bibliography, and did not include those kindred subjects with which it is often confused. The following subjects were discussed:

1. Survey of the actual state of bibliographic work.
2. Concerning the different classes of bibliographic work: Universal, national, international, particular, eclectic, critical, analytic, etc.
3. The best measures to take in the indexing of various documents: Books, papers, periodicals, technical documents, music, charts and plans, etc.
4. What cooperation is necessary in the work of making bibliographic indexing? That of printers, editors, publishers, and libraries.
5. Great indexes now in the course of preparation, and the state of the work.

REPORT ON THE CONGRESS FOR THE AMELIORATION OF THE CONDITION OF THE BLIND.

This congress held its meetings from the 1st to the 5th of August, at the National Institution for the Young Blind, under the presidency of M. Dussouchet, who delivered the opening address. The programme was divided into four chief lines of discussion:

1. What is the best system of patronage, (*a*) for the blind who have gone through special schools, (*b*) for those who have not?
2. Should the instruction of blind children be entrusted to blind teachers?
3. What particular means should be provided for a blind child to develop his physical strength in school?
4. In what measure and in what way does the primary schools of seeing children aid in the intellectual development of blind children?

Among the resolutions passed by the congress the most important were the following:

1. That in all countries associations exercising the greatest possible influence to bring about closer relations between the institutions devoted to the blind should open workshops and training schools for the blind who have not had the advantages of a training at special schools.
2. That there be created special schools or asylums for the backward and helpless blind; that there all the sick, indigent, aged, and infirm blind, who for one reason or another can not be cared for by their families, shall be sheltered.
3. That the education of the blind shall, when possible and in so far as possible, be confided to blind instructors.
4. A circular shall be addressed to the heads of universities and academies, urging them to favor, in the normal schools under their jurisdiction, the study of special methods of teaching for the blind; that samples of blind alphabets should be placed at their disposition free of charge.
5. That wherever they will render assistance, ophthalmological clinics shall be established.
6. That the associations for the well being of the blind shall encourage, by means of prizes, those institutions and instructors who favor the education of the blind at special schools and who prepare them for these schools, teaching them to read and write according to the Braille system.

The congress decided to meet at Brussels in 1902, and R. P. Stockmans, who was vice-president of this congress, was charged with the organization of the next.

REPORT ON THE CONGRESS OF BOTANY.

By JOHN S. HOLBROOK.

The congress met at 9.30 a. m., October 1, in Room A, Hall of Congresses, Cours la Reine.

The meeting was called to order by M. Mussat, temporary chairman. After the welcome by the chairman, and the report on the preliminaries by M. E. Perrot, secretary-general, the organization of the bureau of the congress was proceeded with as follows:

President, M. J. de Seynes.

Presidents of sessions, MM. Dutailly, Drake del Castillo, Flahault, Mussat, and Rouy.

Secretary-general, M. E. Perrot.

Secretaries of sessions, MM. Gaillard, Guérin, Hochreutiner, Guéguen, Huber, Lutz, Frémont, and Julien.

Treasurer, M. H. Hua.

Committee of honor, French (members of the Institute of France), MM. Bonnier, Bornet, Huignard, Prillieux; foreign (official delegates of foreign nations), MM. Alwood, Britton, Dyer, Errera, Filarsky, Gallardo, Gamble, Grescesce, Hochreutiner, Holbrook, Jaczewski, Johnson, Niederlein, Ramirez, Wildemann, Vladescu.

Announcement of programme, and adjournment.

Other sessions were held as follows: October 1, 2 p. m.; October 2, 1.30 p. m.; October 3, 9.30 a. m.; October 5, 9.30 a. m.; October 8, 9.30 a. m.; October 8, 2 p. m.; October 9, 2 p. m.

The proceedings at these sessions may be divided into two parts:

Communications read, and debate and action on propositions before the congress.

The following communications were actually read before the congress:

OCTOBER 1, 2 p. m.

1. "Unification of methods employed for the determination of the Mucedineæ and Levuræ," Messrs. Lutz and Guéguen (French).
2. "On a method of pure culture for algæ," M. R. Chodat (Swiss).
3. "What methods of propaganda are to be employed to facilitate popular instruction concerning fungi," M. Rolland (French).

OCTOBER 2, 1.30 p. m.

1. "Relations of herbaria, exchanges, etc.," M. Flahault (French), M. Mouillefarine (French).
2. "Methods of classifications of botanical collections from the practical point of view," M. Drake del Castillo (French).
3. "Actual state of our knowledge of the reproduction of higher fungi," M. Dangeard (French).
4. "Modification of local flora, adventicity, naturalization," Dr. Gillot (French).
5. "Question of words in nomenclature," M. J. Chalon (Belgian).

OCTOBER 3, 9.30 a. m.

1. "Comparison of the flora of various regions of Central Africa:" (a) "Belgian Congo," M. A. de Wildemann (Belgian); (b) "French African Colonies," M. H. Hua (French); (c) "Region of Timbuktù," M. B. Chevalier (French).
2. "Littoral vegetation of the Amazon," M. Huber (Swiss).
3. "Contribution to the study of the flora of Morocco," M. E. J. Camus (French).

OCTOBER 5, 9.30 a. m.

1. "Teratological variations in digitalis," M. Angel Gallardo (Buenos Ayres).

OCTOBER 8, 9.30 a. m.

1. "Influence of the soil and the plants that grow therein on the development of fungi," M. Boudier (French).
2. "On the frequent independence of stipules, sepals, and stipulari petals," M. D. Clos (French).
3. "Viviparity in the vegetable kingdom," M. D. Clos (French).

4. "Geobotanic study," M. J. Jaccard (French).
5. "On the nomenclature of pericyclic and pseudo-pericyclic tissues of the stem and of the leaf," M. Gidon (French).
6. "A comparative study of gaseous exchanges which are produced between oleaginous seeds and the atmosphere during their formation and germination," M. C. Gerber (French).
7. "On a particular manifestation of geotropism and heliotropism," M. Hochreutiner (Swiss.).
8. "A few words on the alpine group of the botanical garden of Koloswar," Professor Istwanfi (Hungarian).
9. "The flowers of Fumariaceæ compared with those of Cruciferae," M. Martel (Italian).
10. "Scheme of phytogeographic nomenclature," M. Flahault (French).
11. "Variability and mutability," M. Hugo de Vries (Dutch).
12. "Demonstration of models made for mycological teaching," Professor Istwanfi (Hungarian).

OCTOBER 8, 2 p. m.

1. "Reactions of the cellular nucleus in regard to parasitism and symbiosis," M. R. Chodat (Swiss).
2. "Polymorphism in *Loroglossum hircinum*," M. Gallé (French).
3. "Adoption of an international unity in micrometric measures," M. Mussat (French).
4. "Nuclear evolution among Uredinæ," M. René Maire (French).
5. "Anatomical interpretation of the anomaly of stems in the cyclosporous dicotyledons," M. Gidon (French).
6. "An experiment in selection," M. Ph. de Vilmorin (French).
7. "Establishment of a periodic organ destined to publish new names for botanical science in order to avoid as far as possible a multiplicity of synonyms," M. H. Hua (French).

OCTOBER 9, 2 p. m.

1. "Phytostatistics," M. Angel Gallardo (Buenos Ayres).
2. "The fruit of some Rosaceæ," M. Dutailly (French).
3. "The flora of the Klondike," Mr. Britton (American).
4. "Flora of the Amazon," M. Huber (Swiss).
5. "On hybrids," Abbé Lèveillé (French).

PAPERS ON THE PROGRAMME NOT READ.

- "Certain points on the biology of fungi," M. Bourquelot (French).
 "Observations on the biology of fungi," Dr. C. B. Plowright (English).
 "Classification of Gymnoasceæ," M. Matruchot (French).
 "Fungus flora of desert regions," M. N. Patouillard (French).
 "Comparative study of the flora of Madagascar," M. Drake de Castillo (French).
 "Observations on saxifraga," M. M. Marcaillou d'Ayméric (French).
 "Orchies pseudo-mili. aris, a new hybrid," Abbé Hy (French).
 "Sections in the genus *Echium*," M. de Coincey (French).

DISCUSSIONS AND MEASURES ADOPTED.

The paper of M. Rolland on methods of popular instruction in determination of fungi caused much discussion, resulting in the expression of the following recommendation:

That the instruction in fungi, poisonous and edible, be introduced in the primary schools of France and that this instruction be carried on by means of plates and diagrams prepared only by competent botanists.



ENGLAND'S EXHIBIT, EDUCATIONAL SECTION, SHOWING UNIVERSITY EXHIBITS.

The periodicity of congresses came before the meeting of October 3, and after some discussion it was resolved: "That congresses should be periodic." The question of lapse of time between congresses being fixed by the resolution "that the periodicity should be five years."

The question of nomenclature came up in the same session, but after much discussion and some disorder it was decided to leave this matter to the next congress, as the present one was considered incompetent to deal with it.

The question of the next congress was taken up in the session of October 5, immediately after the reading of the minutes:

I. Proposition made by Professor Britton (American) and adopted unanimously: "That before proceeding to a vote on any proposition, the said proposition be submitted to the meeting in writing and in three languages, French, English, and German." This rule to apply to this and to the next congress.

II. "That French be the official language of the next congress."

III. That communications may be made in any language, but that they shall be translated into French and accompanied by a résumé in English and German.

These propositions called for much discussion. No. II was objected to, it being held by some members that the official language of the next congress should be that of the place in which it is held. Professor Britton defended his proposition by recalling the fact that French is the official diplomatic language of the civilized world. The two propositions were finally combined, amended, and unanimously adopted as follows: "French, German, and English may be indifferently employed at the congress, all propositions, discussions, and communications being immediately translated into the other two languages from that in which they were submitted."

Proposition: "That the next International Congress of Botany be held at Vienna, in Austria" (Professor Britton). Discussion followed, the French members arguing in favor of some more central location, preferably Geneva or Brussels. M. Perrot, the secretary, defended Vienna, saying that it was known that for personal reasons it would inconvenience both Geneva and Brussels to receive the next congress and recalling to the congress that a general invitation had been extended to botanists by M. Wettstein and his Government, through M. Wissner, to meet at Vienna.

The Vienna proposition was finally adopted.

The organization of the next congress was left in the hands of M. John Briquet (Swiss), he to correspond with the various societies, institutions, etc., as to number of delegates, programme, etc.

Proposition by Professor Britton: "That this congress extend its thanks to M. Wettstein and the Austrian Government and to M. Wissner for their cordial invitation," adopted unanimously.

Proposition: "That modifications or additions to the nomenclature code be made in the French language," adopted after some discussion.

At the session of October 8, 2 p. m., the following propositions were submitted:

I. By M. Mussat (French): "*Resolved*, That from January 1, 1901, the savants of the world be invited to adopt as the unit of micro-measures the thousandth part of a millimeter, already used in France and elsewhere, which will be designated by the Greek letter mu (μ), and, in consequence, that constructors be requested to employ only this unity or its multiples and fractions in the graduations of instruments." Adopted unanimously.

II. By Professor Britton: "*Resolved*, That the next international congress of zoology be invited to appoint a commission to cooperate with M. Briquet in making efforts to unify the nomenclature of all natural history." Adopted unanimously.

III. By M. H. Hua: (1) *Resolved*, That there shall be established a periodic international organ destined to the publication of new names in the science of botany.

(2) By a new name is meant a denomination not having been hitherto used in the science—names of new species, or names of species arranged under a generic vocabulary different from that in which they have been described.

(3) The right of priority for the future will be exclusively reserved for denominations published within a certain period in this organ.

(4) To the mention of new names as defined in article (2) may be added that of new figures and their complementary descriptions.

(5) This organ shall bear the name "*Monitor novitatum de botanice systematica universalis*."

(6) The *Monitor novitatum*, etc., shall appear every three months under the direction of a high committee formed of the directors of the principal botanical collections throughout the world, and by the care of a controlling secretary named by this committee.

(7) Authors and editors of novelties will be asked to send to the controlling secretary the list of new names, new figures, and their complementary descriptions published by them, with mention of the date and place of publication.

(8) The right of reproduction shall be given to reviews and journals at a minimum subscription rate destined to cover the cost of shipment and of printing.

These propositions, after discussion, were amended and passed as follows: Articles (1) and (2) were adopted unanimously. Article (3) was stricken out. Article (4) was passed unamended. Article (5) was amended to:

Resolved, That the title of this organ be reserved for further consideration.

Article (6) and further articles on the organization were stricken out and the following resolutions adopted in their place:

1. The congress desires that the publication of the organ be by the international card system, and that it appear at least once in three months.

2. The congress desires that M. H. Hua be instructed to communicate with others for the best realization of the scheme.

October 9, 1900, 2 p. m.: In this, the closing session, but one proposition was laid before the congress. This, by M. Jaczewski (Russian), was as follows: "That the bureau of this congress remain functional until the organization of the bureau of the next." Unanimously adopted.

The remainder of the session, after the reading of the papers, was occupied by the reading of the report of the secretary-general, M.

Perrot, which summed up briefly the business accomplished by the congress. This was followed by the speech of the president, M. de Seynes, who recalled that this was the second time that Paris had been honored by an international congress of botany, the first being 1867. He thanked the foreign members for their coming, the officers of the congress for their labors, and especially M. Perrot, the secretary general. The congress was then formally closed.

EXCURSIONS.

The members of the United States delegation took part in the various excursions which occurred as follows:

Tuesday, October 2, 9 a. m., visit to the collections, herbaria, and botanic garden of the Natural History Museum, at the Jardin des Plantes, under the direction of Professor Bureau and M. Cornu.

Wednesday, October 3, 2 p. m., visit to the herbarium of M. Drake del Castillo, 2 Rue de Balzac, Paris.

Thursday, October 4, 8.40 a. m., rendezvous at the Gare de Lyon to visit the private cultures of M. Maurice de Vilmorin at the domain of "Les Barres."

Friday, October 5, 2 p. m., visit to the herbarium of M. Rouy, at Asnières.

In conclusion, the members of the United States delegation wish to express their hearty and sincere thanks to the various French gentlemen who, by their social entertainments, made the intercourse between members so cordial and gave opportunities for the various members to meet on more friendly footing. The thanks of all members of the congress are due to M. Drake del Castillo for his delightful soiree of October 3; to M. Maurice de Vilmorin for his open-handed and generous hospitality on the occasion of the excursion to his domain, not only for the dinner at which he entertained those who took part in the excursion, but for his generosity in permitting the delegates to help themselves to whatever was new or of interest to them throughout his estate. Thanks are due to M. Rouy; to the two societies of mycology and of botany of France for their lavish banquet tendered to the foreign members on October 6; and finally, to M. J. de Seynes for a charming soiree given to all the members of the congress and their families at the Hotel Continental.

CONGRESS ON THE OWNERSHIP OF BUILDINGS.

The congress on the ownership of buildings was one of the most important of the international congresses held in Paris. The congress opened on the 28th of May, and held daily sessions during six days. The proceedings of the congress included public sessions, general sessions, sectional sessions, conferences, and visits to scientific and

industrial establishments. The congress was organized by the board of public buildings of the city of Paris, and was under the patronage of similar organizations in Vienna, Berlin, Italy, and Budapest. The president of the board of organization was M. Paul Beauregard.

The congress was divided into six sections. Section 1 considered imposts and fiscal legislation in the principal countries of the civilized world, rights of transmission, taxes on revenue, etc.

Section 2 considered the insurance system of different countries, insurance against fire, the formation of cooperative insurance organizations among owners, the risks incurred by owners of building estates.

Section 3 considered sewerage, healthfulness of towns and dwellings in the different countries, the rights and duties of proprietors.

Section 4 considered building property and the mortgage system in different countries.

Section 5 considered the judicial and administrative organizations of various countries.

Section 6 considered labor unions, commercial syndicates, building and loan associations, etc., in various countries. This section took their especial subjects on the six successive days of the congress.

CONGRESS OF METHODS OF TESTING BUILDING MATERIALS.

A congress of the specialists of all countries, for the purpose of obtaining uniformity in the testing of materials of construction, was held at Paris July 9 to 16. The congress was largely attended, as the subject is considered a most important one, and the unifying of testing methods would be of inestimable value to the business and scientific world. Among the most important papers read at this congress was one on "International specifications and methods of testing steel and iron," which is quoted in full:

INTERNATIONAL SPECIFICATIONS AND METHODS OF TESTING IRON AND STEEL FROM AN AMERICAN ENGINEER'S STANDPOINT.

[By William R. Webster, consulting and inspecting engineer.]

Although this congress does not propose to adopt general resolutions on subjects presented, it is hoped that it will, nevertheless, through its papers and discussions, bring about results of lasting benefit to the manufacturers and users of steel in all countries. It will undoubtedly pave the way for the introduction of better methods of working, better specifications, and better methods of testing by getting rid of some of the old notions on steel that are worse than useless. There is enough information available to justify these statements, and there will never be a better time than the present to undertake such work, as all parties interested meet here on common ground to discuss freely the results of recent investigations, their bearings one on the other, and on methods of working, as well as methods of testing and specifications. This will bring out many new points and present old ones in their true light. The work should be regarded as that of cleaning house, in the sense of getting rid of a lot of old rubbish in our present specifications and rule-of-thumb methods of working.

After this preliminary work has been done it will be possible to draw up specifications that will be reasonable and just, both to the manufacturer and to the consumer. To attempt to do the work in any other way would be a waste of time, as we must first establish sound foundations for a starting point. But even when satisfactory specifications and methods of testing have been adopted, they can not be regarded as final, for it will be necessary to change them from time to time as our knowledge is increased.

Formerly the manufacturers avoided discussing methods of manufacture and chemical composition of steel as affecting the character of the finished material, claiming "that it was none of the engineer's business as long as the tests of the finished materials gave satisfactory results." They also advocated leaving out the chemical requirements altogether. But the day for this is past, and the manufacturers are now ready to discuss freely with the engineers and investigators all points that have any bearing on their materials, methods of working, or specifications, and all parties will be well repaid for an exchange of ideas on these broad lines. In order to bring about a full discussion and hearty cooperation it is only necessary to point out the practical objects in view and the general lines to be followed. This has been shown by the experiences of the International Association for Testing of Materials and former conferences, as they worked for some fifteen years on standard methods of testing materials without receiving much support from our American manufacturers, who considered the introduction of additional refinements in methods of testing unnecessary unless corresponding changes were made in the specifications. But now that the international association has taken up the matter of international specifications our manufacturers are deeply interested and are cooperating in every way possible. This great change has been brought about in the past two or three years, and the work on and introduction of standard specifications and methods of testing are going along hand in hand, as they should do.

At this time it would be a decided step backward to give up the chemical requirements in our specifications as we are learning more of their true value every year. Again, the engineer does not test each piece of material, but from tests of a part accepts the whole. Now, if the results of such tests are to be relied on we should start with a steel of uniform chemical composition and use uniform methods of heating, rolling, or forging to produce uniform results in the finished steel. This is better known to-day than ever before. In deciding on the chemical limits advantage should be taken of the results of recent scientific investigations and also of the practical experiments of the manufacturers. The limits should be broad enough not to impose unreasonable hardship on the steel maker, but narrow enough to constitute an additional check on the physical tests of the steel. Due consideration, of course, should be given to the size of the finished section into which the material is to be rolled, forged, or cast and also to any subsequent annealing or other treatment it is to receive.

The scientific investigators are doing excellent work in various lines. They have introduced, with good results, more accurate methods for chemical determinations and at the present time they are giving much assistance to the introduction of uniform methods for physical tests. This should be encouraged as there are many features in the present widely different methods that could be standardized to great advantage. But too much must not be expected from uniform methods of physical testing. The differences often observed in tests of what is apparently the same steel are not so much due to errors in the methods used as to other causes. This is shown by recent researches on the heat treatment of steel whereby great differences of structure in the same piece of steel were proven to be due to heat treatment alone and it only required the ordinary bending tests to show the changes, while in closer observations of temperature by pyrometer and examination of structure by microscope changes were noted for differences of temperature so slight as to have been

formerly considered of no importance. On the other hand, some of our more advanced steel manufacturers so well understand these changes and the importance of controlling temperature that they are using the pyrometer in their everyday work (the microscope being used to check results as well as to investigate all abnormal cases) and consider that they have been well repaid for the expense of this work. As engineers become more familiar with the superior results that can be obtained by the careful heat treatment of steel, in working, annealing, etc., all manufacturers will have to improve their methods and products in this respect where it is found necessary.

Formerly these differences due to heat treatment in the results of physical tests were so little understood that many investigators who tried to find the relation between the chemical constitution and physical properties of steel were discouraged by the conflicting results and gave the problem up. This subject has always been one of the greatest interest to me. Some years ago, when connected with one of our large steel works, I found it necessary to improve the methods of grading the steel. I worked on this for three years and succeeded in applying the results obtained to practical purposes with great advantage in the following manner:

A sample of a given "heat" of steel was analyzed while the steel was in the soaking pits; from this analysis the tensile strength was estimated, and the steel was then rolled to fill the orders to which it would be best suited (allowance being made, of course, for the section to be rolled). It was found that in most cases the finished material met successfully the most rigid requirements. When a heat of steel did not give the results expected, there were indications that pointed to the source of trouble, and it was soon corrected. This close watch on the chemical composition and heat treatment brought about results that had been previously considered impossible. By the old method of working, the heat of steel was allowed to get cold, while one slab was rolled into the finished product and tension tests were made. By the new method, all the steel can be rolled into the finished product without allowing it to lose the original casting heat, so that a very large saving is effected by avoiding the expense of reheating and rehandling. The rejections are also fewer than formerly. Many manufacturers are now using this chemical method in grading their steel. It has been made possible by the quick methods of chemical determinations, and all efforts to improve these should be encouraged, as they are of such great importance to the steel makers.

In connection with my investigations, I have found it necessary to consult the work of many other investigators of steel. I found that it made very little difference which one was followed up, as I was soon compelled to consider the results collectively, each having a close bearing on the others. It is these cross relations that make the problem so interesting and instructive. Others have worked on it since, and to-day we can distinguish, much better than ever before, the effects of the chemical elements on the finished steel, as well as those due to its heat treatment. I do not mean to intimate that the values used for each element are correct, for they will no doubt be improved from time to time, but I do claim that everything goes to show that the true starting point in the work before us is the relation of the chemical elements in the steel to its physical properties, in connection with different conditions of heat treatment and mechanical work. As yet we have very little data showing how the changes due to heat are modified by mechanical work. This is the most important present field of research, and no doubt means will be furnished for carrying out a full investigation on large masses of steel as used in everyday practice. If this is done, the element of time in connection with temperature will be found of much more importance than is generally admitted. In this connection I take the liberty of quoting from one of my former papers:¹

¹ "The relations between the chemical constitution and the physical character of steel." *Am. Inst. Mining Engrs.*, volume 28, 1898.

"The objection has been raised that the chemist only gives the total carbon present in steel, and not the condition in which it exists, and that we can not expect to predict from this total carbon what its physical effect will be, as in one case we may have more of the hardening carbon present than in another, for the same total carbon. This objection is not as important as it seems, for the form of the carbon present depends largely on the heat treatment, and that is again modified by work of rolling. Therefore, if we take any given grade of steel and by experiment determine the physical effect of different heat treatments in connection with work we have the direct answer, instead of waiting for the proportion of hardening carbon present to be given by the chemist or microscopist. We know to-day that as carbon increases the differences due to heat treatment or finishing temperature in rolling are much greater than in the lower carbon steels. This is no doubt due to the greater change in the form of the carbon present. It calls for a little more leeway between the high and low limits of ultimate strength in specifications and much closer vigilance as to heating and finishing temperature in rolling the higher steel. Microscopic examinations will, of course, be of the greatest service in this connection and will give us definite information on many points that are now in doubt.

"In this practical age it will be asked: 'What is the actual value of all this, and is it worth while to bother any more about it?' The answer is that already the steel maker depends more and more every year on the very points that we have been discussing, and the engineer should know what he is doing when he uses both chemical and physical limits in his specifications. Is it to be wondered at that to-day we have specifications in which the chemical requirements do not at all agree with the ultimate strengths specified? This in the ordinary home orders may make very little difference, as it is an easy matter to investigate and make proper modifications required, but in specifications from foreign railroads or engineers at a distance for material on export orders it is a very different matter. There is no time to refer questions of this kind, and the inspector is sometimes forced to condemn material that he knows from experience is all right. It may give better physical tests than were called for, but not conform to the chemical requirements in the particular specifications in question, though it would meet both the physical and the chemical requirements of our leading engineers and railway companies in this country."

Many other objections were formerly made to this method of grading steel by its chemical composition, and even now, when it is in practical everyday use, you still hear reasons given why it can not be relied on, notwithstanding all the facts to the contrary. The whole matter reduced to its simplest form is this: Suppose the records of a given works show that a heat of steel of a given composition rolled into material one-half inch thick gave 65,000 pounds ultimate strength with good stretch and good bends. Now, having at the same works another heat of steel of the same chemical composition, and requiring more of the half-inch material of 65,000 pounds ultimate strength, this second heat of steel, if treated in rolling the same as the first, should give the same results. Almost anyone will agree to this. But, of course, you can not rely on getting heats of steel of the same chemical composition as those formerly rolled, and even if so you might have to roll them into material of different thickness. It therefore becomes necessary to interpolate for the differences by giving each element a value in pounds per square inch for each 0.01 per cent, and also to make allowances for the thickness of material to be rolled. If our observations were large enough, and records could be put in shape for easy reference, there would be no need of this interpolation, but it is impossible to cover all cases in any other way.

Of course, too much must not be expected of this method, and it does not in any way relieve the manufacturers of the usual tension and bending tests required of the finished material, but it is of the greatest assistance to the manufacturer and the inspector in checking the uniformity of the steel. But there is no need of waiting for the complete solution of this complicated problem. By properly applying, while

the investigation is being continued, the information already at hand, we can greatly improve our materials and methods of working. Many of our best investigators are steel manufacturers and have already shown what can be done in this line by a practical application of the results of their work. There has not been the general advance in all departments that should have been made, but it will come as one of the results of the work now before us.

In my work I found the first thing to investigate was the relations of the physical properties of steel from the same melt when rolled into material of different thicknesses, and also the results of same thickness of material when rolled under different conditions of finishing temperature, etc. This led to many interesting experiments and showed the difficulties of controlling the amount of reductions in rolling and the finishing temperature. The men working by the ton naturally concentrate their efforts on a large output irrespective of any refinements in rolling. It was not an uncommon thing for the rollers to bring out what they termed the second heat in rolling. They could tell by the first pass or two the condition of the bloom, and if it was well heated and soft they would then take as heavy reductions in the next passes as possible; in fact, almost stall the universal mill. This excessive amount of work in large reductions made the slab on the surface hotter than in the first passes, considerable heat being generated by the work and the hot metal being reduced and elongated quickly, bringing the hot interior up nearer to the surface without the usual time for it to cool down. Steel so treated was always injured, and it made no difference what temperature it was finished at, it never was as good as when rolled with small reductions from the start. This trouble was in no way caused by overheating the slab in the furnace to start with, as two slabs of same dimensions taken from the same furnace could be made to give different results, depending on treatment in rolling, even when the final finishing temperature and thickness of material were the same. This matter has not received the attention it deserves, as it may account for some of the differences in the behavior of steel that have not been explained by chemical composition and total reduction received in rolling or the finishing temperature. The old statement that "all work in rolling steel at high temperatures merely changes its form without changing its structure," will have to be modified if the second heat is brought out, for it certainly does more than change the form of the mass.

As the size of the piece of steel rolled is increased, the trouble of controlling the finishing temperature also increases, as the large mass holds much more internal heat, and steel of the very best chemical composition may be rendered brittle and worthless (in that condition) by being finished at too high a temperature. This trouble is again increased by trying to roll heavy sections on a light mill, but the worst of all to contend with is a heavy section of high-carbon steel on a light mill.

In rolling shapes or flats in grooved rolls, the amount of reduction for each pass is fixed, and the blooms used are as large as possible in order to control the finishing temperature and secure what experience has shown to give the best results. But even then with the heaviest sections it is necessary to hold them back between the passes or they will be finished at too high a temperature. With heavy plates we found the results were very much improved by taking light passes and finishing them at a low temperature. This produced good, reliable material, but when these precautions were not taken the plates had a large, coarse grain and would not meet the requirements.

All are familiar with the changes that take place in the physical properties of steel, and the large, coarse grain that is formed when it is heated up to a high temperature and allowed to cool without work, the amount of the change depending on the composition of the steel, temperature to which it is heated, time kept at that temperature, and manner of cooling. We also know that after steel so treated has cooled down, it can be restored by being heated up to a low temperature and



LOOKING NORTHWEST FROM SOUTHEAST CORNER OF PUBLISHERS' BUILDING, GROUP III ANNEX, ESPLANADE
DES INVALIDES.

annealed. This breaks up the coarse structure. It is well known that the mechanical work of forging or rolling on the hot steel, if continued to a low enough temperature, will also break up the coarse grain and give the fine-grained, tough material so much desired. To produce the best results the treatment has to be governed by the grade of steel being worked. In the application of all this, it makes no difference whether the steel changes from the fine to the coarse grain while the temperature is rising, or whether this change takes place, as Mr. Sauver claims, while it is cooling. I am as anxious as anyone to know when the change does take place and all about it, but the matter of vital importance is to work steel in such manner that it is not put in service with this coarse grain. There are two simple and well-known facts—how to produce the change, and how to correct it—yet they are violated every day in many ways. Take, for instance, the complaints of the customers of any large steel works; investigation shows that more than 90 per cent of the trouble is due to bad heat treatment, either at the mill to start with, or at the shops afterwards. From this it is evident that material is often injured in the shop; and in order to secure the best structures it is just as necessary to take up shop methods with the same thoroughness as methods of testing and specifications. If this is done, we shall not hear any more of the so-called “mysterious failures of steel.”

In my present work as a consulting and inspecting engineer, representing the users of steel both at home and abroad, I have found many specifications in which the chemical and the physical requirements conflict. This is not to be wondered at. It is in part due, no doubt to the use of information received from the scientific investigators on the one hand, without proper consideration of its bearing on that received from the manufacturers and practical men on the other. In other specifications it may be found that the manufacturers of a given district have succeeded in having clauses introduced that shut out competitors in other districts. In some cases, parts of two good specifications have been taken to form a third, which is, to say the least, inconsistent with itself. This condition of things is not surprising when we consider that structural steel is comparatively a new material, and that there never has been the full and free exchange of ideas that is now proposed at this congress. In order to bring out some of these points for discussion, I will refer to matters found in the specifications, methods of manufacture, and methods of testing in use to-day. The discussion itself will doubtless bring out many more of equal importance.

Methods of testing will not receive in these remarks the prominence they deserve, since they will be fully covered by other contributions.

1. In the manufacture of heavy plates there are chances of trouble through their being finished, in rolling, at too high a temperature. It is not an uncommon matter to try to get such plates accepted on the results of tests made on thinner plates rolled from the same heat of steel, or, when heavy plates are tested, allowances are made on the per cent of elongation and degree of bending. The better plan would be, no doubt, to anneal all extra heavy plates and take no chances whatever, but the annealing should not be done as directed in a specification sent me some time ago, which stated: “All material must be annealed from the heat of rolling before it has time to cool.” Now this is not annealing at all. It is only slow cooling, and it will make a plate or other heavy section that has been finished at too high a temperature worse than it otherwise would be, as the size of the grain is increased and the steel is made more brittle. Too much importance can not be given to this matter, as much steel has been treated in this manner in the mills and shops in rolling, forging, flanging, etc. In this connection the recent investigations on the heat treatment of steel have shown the importance of allowing the material to cool down before it is heated up for annealing, but this important information has not been brought clearly before the manufacturers and shop foremen. If nothing else were accomplished at this time

than to bring this matter home to the manufacturers, engineers, and users of steel in such a convincing manner that better methods of annealing will be generally introduced, it would be a full return for all the efforts of this congress.

2. Should axles, tires, forgings, and castings be annealed or not? It is claimed that when material is to be annealed there is a tendency on the part of the manufacturer to use an inferior steel that will be improved enough by annealing to meet the physical tests. This is only another plea for specifying proper chemical limits, for when these are stated the question is narrowed down to results that will be obtained in service from good steel, both without annealing and after annealing. This will make another important matter for discussion, with much on record in favor of annealing, yet in many cases it is claimed that good results are obtained without annealing, and some specifications will not allow it while others insist on it. This confusion arises, no doubt, from results obtained where improper methods of annealing have been used and little or no check has been kept on the temperature and time for annealing different grades of steel.

3. Quench bends are commonly specified and considered an important check on the quality of the steel, but they never should be relied on, unless cold bends are made on the same material, for the following reasons: A piece of mild steel that has been injured by being finished in rolling at too high a temperature will not give good results in cold-bending tests, yet when another piece of the same steel is heated up and quenched in water, it will then bend down flat. The cold bend would condemn it, while the quench bend would pass it. This is due to the fact that in heating the material for quenching the coarse crystalline structure is changed by annealing, and on quenching there is not enough carbon present to harden it. This seems so self-evident that one wonders that the cold bend has ever been omitted; yet such is the case, and inferior materials have been accepted on quenched bends.

In this connection I quote the following from Mr. J. E. Stead's reply to discussion on his paper on "The crystalline structure of iron and steel" (Journal of the Iron and Steel Institute. No. 1, 1898):

"The ordinary mechanical testing machine is incapable of determining the weakening effect of coarse granulation; the percussion test is the most infallible and useful. It is possible to draw out the coarse-grained soft steel to fiber in machine by steady pulling, but a sudden blow may cause it to snap in two more easily, which it would not do with same good steel if it were fine grained."

4. The tendency is to insist on test pieces with a gauge length of 8 inches, and, in some cases, in order to obtain them, methods are used that are anything but satisfactory. For instance, in large forgings a prolongation is hammered down to $1\frac{1}{2}$ or 2 inches square. In another case, after a tire is tested under the drop a piece is cut out and then heated in order to straighten it, so that the long test piece can be obtained. In each of these cases the materials tested will not represent the steel as put in use, and test pieces with a 2-inch gauge length could have been obtained that would have given reliable information of the steel as put in service. These short test pieces have much to recommend them in cases of this kind, and are often specified. No doubt they will be universal some day. But for plates, bars, and shapes the longer test piece is better, and most of our records are based on it.

5. In ordinary practice an allowance is made in estimating the per cent of elongation on plates of different thicknesses, by taking a gauge length of 8 inches for medium thickness and shorter gauge lengths for thicker and thinner plates. This tends to keep the apparent per cent of elongation the same. It is a better plan to specify the elongation in 8 inches in all cases and make reduction in percentage for heavier and lighter plates.

6. The per cent of reduction of area is generally called for and relied on by many as one of the best indications of the quality of the steel. This may be all right when round test pieces are used, but with the ordinary rectangular test pieces of different

widths and thicknesses, with their square corners, the results do not always show the value of the material.

7. Formerly an elastic limit of one-half the ultimate strength was standard practice, but now in many cases much higher results are called for. This has come about by the careless methods used in the rush of work, giving results that are too high.

8. In some cases, in specifying the ultimate strength, the lower limit only is given, reliance being placed on the other requirements of elongation, reduction of area and bends, to prevent too hard a steel being used. But there are chances of wide variations in the ultimate strength, even when great care has been used in fixing the other requirements as a check; and it is a much better plan to name both the high and low limits in all cases, making the differences between these limits to correspond with what can reasonably be expected from the best practice on the different grades of steel. In this way the practical difficulties encountered in rolling the high-carbon steel can be recognized and provided for in the proper manner, but not by omitting the upper limit in the specification.

In all of this work we can not overlook the practical difficulties the manufacturers have to contend with, and the best way to show our appreciation of the good work they have already done and to encourage them to new efforts is to leave out all hair-splitting requirements in our specifications and methods of testing. By confining ourselves to the essential points, of the importance of which we are sure, and then insisting on what is called for, the results will be better for all concerned. We must also bear in mind that notwithstanding all our specifications and refinements in methods of testing, there is a strong tendency with most of us to fall back on the ordinary tests of the blacksmith shop when we want to know the value of a piece of structural steel and the amount of abuse it will stand. In these simple tests we use a full-sized piece wherever possible, and the information gained is in proportion to our general knowledge of the subject, as much recent data can be brought to bear on such tests. It is not so much the methods used or the refinements introduced into our tests that show the quality of a piece of steel as the heat treatment it has received in connection with the methods used and results obtained.

STEEL RAILS.¹

The usual practice in this country, on steel rails, is to specify the chemical requirements and drop tests. But in foreign specifications it is not unusual to find bending tests, deflection tests, drop tests, tension tests cut from the head, and tension tests cut from the web. All of these tests are certainly not necessary, and the tension test is one that is almost impossible to comply with and keep up with the output of the mills on account of the delay in preparing specimens and making tests. These tests can certainly not be made on each heat of steel, and the slight differences in finishing temperature will give wide differences in tensile strength. Furthermore, it is an open question whether the results of such tests show the value of the rail as a whole. The drop test is the most satisfactory of all these tests, and can be made on a short piece of rail from each heat of steel, without delaying the mills in any way. The result of these drop tests, when taken in connection with the proper chemical requirements, are a sufficient and reliable check on the quality of the steel as well as the rail itself. As so much depends on rails and their tonnage is so large, it is to be hoped that this matter will receive the discussion it deserves.

It is no doubt safe to assume that the total amount of reduction from ingot to rail in our modern mills is sufficient, for if much larger ingots are used there will be trouble from segregation, and brittle rails result from part of the ingot, unless the greatest precautions are taken as to the amount of discard.

¹In the following I quote freely from my articles on "Standard specifications for steel," *Engineering Magazine*, March, 1899, and "Rail steel, its chemistry and heat treatment," the *Railroad Gazette*, February 16, 1900.

The ordinary flanged rail is one of the hardest of all sections to roll, owing to the large mass of metal in the head holding the heat much longer than the thin metal in the web and flange. The flange cools off too quickly and prevents a continuation of the rolling on the head required to finish it at a low enough temperature to produce the best results. This trouble is greatly increased with the heaviest sections, as the differences between the finishing temperature of the head and flange are still greater (the head being so much larger, and owing to its compact shape, carries the heat much longer than the thin wide flange which does not show the same corresponding increase in capacity to carry the heat), and the heaviest rails are generally finished too hot. This difficulty is further increased by using a higher carbon steel in heavier rails, which requires a lower finishing temperature in rolling than the lower carbon steel in the lighter rails. But instead of this we have the higher carbon heavy rails finished at a higher heat, which, as a matter of course, gives a much larger grain in the head of the rail than that in the head of the light rails. Many suggestions have been made to overcome this difficulty, but it still exists. A thorough investigation may show that with the heaviest rails more metal in the flange and web would be very advantageous, not for additional strength, but to carry the heat and allow the head to be finished at a much lower temperature, so as to get the beneficial effects of the mechanical work of rolling at this low temperature, which elongates the grain and produces that fine, tough structure which is so much desired. In any case, as the carbon is increased the phosphorus should be kept down or the rails may be made brittle from that cause.

The beneficial effects of finishing a heavy rail at the proper temperature in rolling is shown in rerolling heavy rails that have not given good service in use, but after this second rolling they have given satisfactory results. This is accounted for in the first place by the annealing action of the furnace in heating the rails up to a low heat for rolling, the coarse grain being removed in this way, and they are not heated up high enough to form it again. Then the final work of rolling on the head is at a low temperature, as the flange is in a condition to allow this work at proper temperature.

Cases have been cited where good rails chemically have given poor results, and where poor rails chemically have given good results, also where rails of low carbon steel have given better wear than those of higher carbon steel. These differences might have been, and probably were, produced by differences in the heat treatment of the rails, and the conflicting results are the strongest plea for paying the closest attention to what may seem to many small matters in the rolling and manufacture of steel rails. The problem must be considered as a whole; that is, the composition of the steel, its manufacture, heat treatment, and the section of the rail.

As a general thing railroad companies have not enough data at the present time to assist the mills in duplicating an order of rails that have given the best results. They, of course, in a general way, know how the rails were made, but they have not this information in detail. From this I do not mean to intimate that an engineer should interfere with a manufacturer's business, or that after a contract has been placed to ask for any additional tests that were not provided for originally, but I do want to call attention to the valuable information that can be arrived at from the very simple and inexpensive drop tests on short pieces of rail. These tests are one of the best checks that we have on the finishing temperature of the steel, yet in many cases they have been omitted and are often not given the credit for showing the character of the steel. I admit that such tests do not show all that could be desired, but they are much better than tension tests for rails, and it is the best test that we have to-day. They should be made on small pieces of rail (some with head up and some with head down) placed on solid supports. If the steel is of the right composition to start with and proper care is used in its manufacture, a uniform rail will be produced if proper reductions and a uniformly low finishing temperature are used. It is this finishing temperature that can be best checked by the drop tests, and some of our rail makers

think so much of this test that they make it on each heat of steel for their own guidance, while other manufacturers do not make any more of these tests than they can avoid. Certainly both parties can not be right. It has been claimed that the requirements of the drop tests are too easy for the heavyweight rails. This may be the case, and if so, the requirements of these tests will no doubt be increased as the quality of the rails is improved. It is a matter that has not received sufficient attention up to this time for anyone to make too definite statements regarding the tests of the heaviest section rails. The drop tests are a check against brittleness and a guard against rails that would break in service. I regret to state that we have more cases of 100-pound rails that have broken in service than is desirable, and it is of the greatest importance to correct this difficulty by using the very best steel chemically and then to roll it under the best possible conditions to produce a fine-grain structure.

As to the inspection of steel rails, it is too often classed by our railroad engineers with that of the inspection of ties, and it is generally the men who will do the work the cheapest they are looking for, or they may consider inspection of so little importance that it is not made at all. Under these conditions they are hardly in a position to tell the mills that they are rolling the rails too slowly or too rapidly, or that they have not properly increased the amount of the hardening elements, etc. What the railroad companies really do want is all the information they can get on rails rolled on their orders, and then to have an accurate record kept of their behavior in service. This would soon give them facts to present in placing future orders.

I have endeavored to make a strong plea for retaining the chemical requirements in our specifications for rails, and bringing them up to date in all respects. To do otherwise would be to admit that we know nothing of the problem, that past experience amounts to nothing, and that we are willing to continue groping in the dark at the very time we are beginning to get light on some of the matters that have been bothering us. There are many other reasons why chemical requirements should be retained. They certainly compel the steel maker to pay the closest attention to his methods of manufacture, and the resultant steel is more uniform than it otherwise would be. But on this, as on most subjects, there is a difference of opinion, and Mr. C. P. Sandberg said at the Stockholm meeting of the Iron and Steel Institute:

"The railway congress in Paris, in 1889, demanded rather hard steel rail, but the congress in London, in 1895, would not sanction it. I trust that at the coming congress in Paris, in 1900, engineers will leave out the chemical composition in their specifications altogether, and only demand an adequate tup test for safety, as well as a limited deflection to secure the required hardness, leaving out the tensile tests altogether. These latter are entirely out of place for rails, which are subjected in use to blow or impact, besides, tensile tests are both slow and costly for the preparation of test pieces.

"The rail is subject to a blow in practice, and therefore should be tested with a blow. The tup test could be done with one rail end for each cast, and the maximum deflection to specify for each rail section could be obtained by experience in testing rails of the required hardness in each rail section to serve for a hardness as well as a safety test. This system of combined testing would cost next to nothing and would not delay the inspection of the rails."

I trust that this congress will not advocate leaving out the chemical requirements in our rail specifications, just as we are beginning to learn something of their value. What is really needed is more light on the effects of the different chemical elements on the finished rails, and I am firmly convinced that in the end the general decision will favor steel of fixed chemical composition for different weights of rails that, in connection with proper amount of mechanical work and proper finishing temperature, will make the toughest, safest, and best wearing rails.

All our methods of testing steel and specifications have been of gradual growth, and were built up by taking material that gave good service in use, and finding out

how it differed from that which had given poor results or failed. Considerable data was accumulated in this way and used in ordering material for new work. Reliance for years has been placed on the chemical composition of the steel, and high phosphorus has always been considered dangerous in all classes of steel. But at times, when steel low in phosphorus failed, the other elements being also low and not accounting for the trouble, the reliance on chemistry as a guide was shaken. For these and other reasons additional physical tests were introduced from time to time to check the quality of the steel. But gradually the importance of the heat treatment of the steel was recognized, and to-day it is safe to say that the heat treatment of steel in connection with mechanical work is of nearly as much importance as the chemical composition of the metal. In considering the effects of one, it does not do to overlook those due to the other, but both should be kept before us, as so much depends on each.

The value of extremely low phosphorus as indicating the quality of steel may be carried too far, as is sometimes the case in basic open-hearth steel with phosphorus extremely low; you will often find a correspondingly extremely low manganese. This steel in many cases will not give good results in forging, and some manufacturers would not risk sending it out for flange work, while others would do so and call attention to its extra quality as shown by the analysis. The steel should have contained more manganese, but the manganese had been used up by the large amount of oxide of iron present and passed off in the slag, and there are great chances of enough of the oxide of iron being left in the steel to injure it. For these reasons extremely low phosphorus in connection with extremely low manganese indicates trouble, and a low limit on manganese in steel would be an additional safeguard.

It is no more than natural that the manufacturer should ask what is the use of all the present specifications, for instance, on medium bridge steel, as all parties accept the same steel. There is more in this than appears at first sight, as a lot of good steel will meet all the requirements of many different specifications. The additional testing often required does not give corresponding advantages, and some of the special tests give much trouble as well as cause considerable delay. It is out of place for me to criticise too severely, as I have also increased the already large number by adding my specifications to the list, my only excuse being to give equivalent results in tests corresponding to the practice at mills in this country, and which could be easily made in place of more complicated tests with which our manufacturers are not familiar. Anyone who has had the specifications of one country to enforce at the mills and shops of another can appreciate the difficulties I had to contend with, and will admit the great advantage international specifications and methods of testing would be to all. In trying to bring this about, the commercial side of the question must not be overlooked, as it may be asking too much of engineers to give up the specifications that have been prepared for their clients, and which have given satisfactory results for years. But no engineer would object to modifying his specifications so as to have them conform to the best practice and methods of working in other countries, unless he has decided to get his materials in one market only. The benefits for all would be so great that no one should hesitate to assist as far as he can without interfering with his established business. This condition has to be met, and it may as well be recognized and discussed at this time. All of our specifications and methods of testing can be brought up to date in many respects by merely availing ourselves of the information at hand. By doing this the engineer would not only receive better material, but in the end the manufacturers would also be benefited by being forced to their best efforts in all departments.

Taking the different specifications and methods of testing in use in the different countries, it at first sight seems a hopeless task to bring about any standard international specifications; but this is not the case. It is only necessary for the engineers and manufacturers of each country to get together and draw up average representa-

tive specifications, based on methods in use, for each class of material, taking, for instance, the following: Steel for buildings and highway bridges, steel for ships and railway bridges, steel for boilers, steel rails, steel tires, steel axles, steel forgings, steel castings, steel wire.

The final work will then not be as formidable as it at first appeared, for it will be reduced to the comparison of a limited number of specifications on each class of material. Of course, it is not to be expected that one final specification will be arrived at for each class of steel, as in some cases it may take two or three, but even then there will be many points in common. From this it can be seen how much valuable preliminary work can be accomplished at this time, and as methods of testing, specifications, and methods of manufacture are so closely united by their bearings one on the other, it is necessary to consider them together if we are to bring about all the improvements attainable.

In general discussions of this kind many important matters are likely to be overlooked, unless some good plan is used to keep them before us. The following table, covering this ground, was prepared by Prof. H. M. Howe for the discussion on the physics of steel by the American Institute of Mining Engineers, a society the transactions of which contain much valuable information on this subject. It was found to be of great service, and I have no doubt it will also be of use at this time.

The physics of steel; suggested lines for discussion.

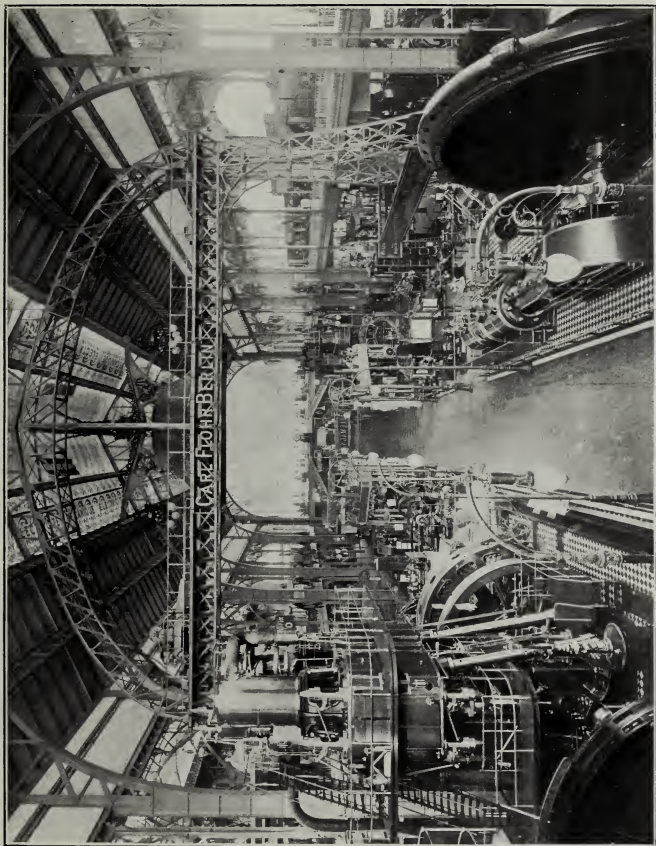
- I. Correspondence between chemical composition and fracture, microstructure, and physical properties.
- II. Influence of—

<ol style="list-style-type: none"> (1) Casting temperature (2) Manner and temperature of heating— <ol style="list-style-type: none"> (a) For rolling (b) For annealing (3) Work (4) Finishing temperature (5) Rate and mode of cooling— <ol style="list-style-type: none"> (a) After forging (b) For casting 	} on	<ol style="list-style-type: none"> (a) Fracture. (b) Microstructure. (c) Physical properties. (d) Tensile properties. (e) Residual stress.
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- III. Segregation, as affected by—
 - (1) Composition.
 - (2) Casting temperature.
 - (3) Rate of cooling.
- IV. Blowholes and pipes, their volume and position as affected by—
 - (1) Composition.
 - (2) Casting temperature.
 - (3) Casting pressure.
 - (4) Rate of cooling.
 - (5) Special additions.
 - (6) Forging.
- V. Hardening, relation between tensile properties and hardness of quenched steel, and—
 - (1) Quenching temperature.
 - (2) Quenching medium.
 - (3) Size of piece quenched.

The American Institute of Mining Engineers was the first American technical society to take up the subject of the chemical and physical qualities of steel as related to each other and to its heat treatment and mechanical manipulation. The following list of the papers and discussions in its transactions will be found to comprise prac-

tically a history of modern progress in this department, and to contain much information indispensable both to the scientific student and to the technical practitioner:

Name.	Title of paper.	Year and volume.
Jno. B. Pearse	Manufacture of iron and steel rails.....	1872-73, I.
A. L. Holley	Rolling versus hammering ingots	Do.
Do.	Tests of steel.....	1873-74, II.
A. MacMartin	Certain mechanical changes in Bessemer steel.	Do.
Prof. T. Egleston	Investigation on iron and steel.....	1874-75, III.
Dr. R. W. Raymond	Phosphorus and carbon in iron and steel.....	Do.
Do.	Annealing spiegeleisen	Do.
A. L. Holley	Some pressing needs of our iron and steel manufacturers.	1875-76, IV.
Do.	What is steel.....	Do.
Frederick Prime, Jr.	What steel is.....	Do.
Dr. August Wendel	The effect of manganese in Bessemer metal....	Do.
Wm. Metcalf	Commercial and scientific nomenclature of iron.	1876-77, V.
G. H. Billings	The properties of iron alloyed with other metals.	Do.
H. M. Howe	Nomenclature of iron.....	Do.
W. E. Cox	Endurance of iron rails.....	Do.
A. L. Holley	The strength of wrought iron as affected by its composition and its reductions in rolling.	1877-78, VI.
Dr. Chas. B. Dudley	The chemical composition and physical properties of steel rails.	1878-79, VII.
Do.	Does the wearing power of steel rails increase with the hardness of the steel.	Do.
Wm. Kent	On an apparatus for testing the resistance of metals to repeated shocks.	1879-80, VIII.
Prof. T. Egleston.....	The law of fatigue and refreshment of metals..	Do.
Dr. Chas. B. Dudley	The wearing capacity of steel rails in relation to their chemical composition and physical properties.	1880-81, IX.
S. A. Ford.....	The amount of manganese required to remove the oxygen from iron after it has been blown in a Bessemer converter.	Do.
Jno. W. Cabot.....	Note on manganese in Bessemer rail steel.....	1881-82, X.
General discussion	On iron and steel as materials of construction.	Do.
Alex. Pourcel	Notes on the relation of manganese and carbon in iron and steel.	1882-83, XI.
Albert F. Hill.....	The management of structural steel	Do.
J. C. Bayles	Microscopic analysis of the structure of iron and steel.	Do.
Alfred E. Hunt	Open-hearth steel charge made for boiler plate.	1883-84, XII.
Pedro G. Salom.....	Physical and chemical tests for steel for boiler and ship plates for the United States Government cruisers.	Do.
J. C. Bayles	The study of iron and steel.....	1884-84, XIII.
Prof. B. W. Cheever	The segregation of impurities in Bessemer steel ingots on cooling.	Do.
R. Gatewood.....	A theory to explain the cause of hard centers in steel ingots.	Do.
F. L. Garrison.....	The microscopic structure of iron and steel....	1885-86, XIV.
Jno. W. Cabot.....	The influence of temperature in steel making on the behavior of the ingots in rolling.	Do.
Pedro G. Salom.....	The manufacture of steel castings.....	Do.
H. H. Campbell	The homogeneity of open-hearth steel	Do.
P. Ostberg	Mild castings from wrought iron and steel	Do.
Wm. Kent	Recent failures of steel boiler plates.....	Do.
A. E. Hunt	Soft steel for boiler plates.....	Do.
F. L. Garrison.....	Microscopic structure of steel rails	1886-87, XV.
B. W. Cheever	Two conditions of phosphorus in iron	Do.
F. A. Delano	Certain conditions in the manufacture of steel rails which may influence their life in service.	1887-88, XVI.
Do.	Rail sections	1888-89, XVII.
Dr. C. B. Dudley	The wear of metal as influenced by its chemical and physical properties.	1890-91, XIX.
J. W. Langley.....	Aluminum in steel ingots	1891-92, XX.
A. E. Hunt.....	The tests and requirements of structural wrought iron and steel.	Do.
Dr. C. B. Dudley	The making of specifications for structural materials.	1892-93, XXI.
H. M. Howe.....	Note on manganese steel	Do.
Wm. R. Webster	Observations on the relations between the chemical constitution and physical character of steel.	Do.
A. Pourcel	Segregation and its consequences in ingot steel and iron.	1893, XXII.
F. Osmond.....	Microscopic metallography.....	Do.
A. Souver	Microstructure of steel.....	Do.
H. H. Campbell	The open-hearth process.....	Do.
Wm. R. Webster	Further observations on the relation between the chemical constitution and the physical character of steel.	1893, XXIII.
H. M. Howe.....	Heat treatment of steel.....	Do.
A. Martens	Microstructure of ingot iron in cast ingots	Do.
R. A. Hadfield	Iron alloys with reference to manganese steel..	Do.



GENERAL VIEW IN PALACE OF MACHINERY, GROUP IV, CHAMP DE MARS.

Name.	Title of paper.	Year and volume.
General discussion	On the physics of steel.....	1893, XXIII, XXIV.
H. M. Howe.....	Pyrometry and the heat treatment of steel.....	1894, XXIV.
F. L. Sperry.....	Nickel and nickel steel.....	1895, XXV.
Wm. R. Webster.....	Note on a proposed scheme for the study of the physics of cast iron.	Do.
Dr. R. W. Raymond.....	Note on copper in iron and steel.....	1896, XXVI.
A. Souver.....	Microstructure of steel and current theories of hardening.	Do.
Wm. R. Webster.....	The relation between the chemical constitution and physical character of steel.	1898, XXVIII.
General discussion	On the physics of cast iron	1895-98, XXV, XXVI, XXVII, XXVIII.

REPORT ON THE CONGRESS OF PUBLIC AND PRIVATE CHARITIES.

By EDITH PRESCOTT WOLCOTT.

In compliance with the request of the director of the department of organization of international congresses, I have the honor to submit the following report:

Having been appointed a delegate from the United States and from the city of Boston to the international congress of public aid and private charity at the Paris Exposition of 1900, I presented my credentials at the opening of the congress, and thereafter attended most of its sessions. The list of American delegates included the following: Messrs. A. W. Clark, Charles P. Kellogg, Graham Bell, Dr. Cummings, Frank H. Hall, W. H. Tolman, Miss Frances G. Curtis, Mrs. Harriet Wells, and Mrs. Roger Wolcott.

Among the vice-presidents of the executive board of the international congress, America was represented by Mr. A. W. Clark, and among the vice-presidents of the honorary board by Mrs. Roger Wolcott, who also represented the city of Boston.

Mrs. Harriet Wells, of Omaha, was vice-president of the first section, and Mr. W. H. Tolman vice-president of the fourth section.

The congress was formally opened in the grand amphitheater of the Sorbonne on Sunday, July 29, 1900, in the presence of the President of the French Republic, who welcomed the delegates. M. Le Jeune, minister of state from Belgium, spoke on behalf of the foreign members of the assembled congress. M. Casimir Perier, former President of the French Republic, was the permanent presiding officer of the congress.

The second part of the meeting was devoted to the reading of an able paper by M. Georgas Picot on "Private charity," and by M. Henri Monod on "Public aid in France in the year 1900." M. Monod held that it is the province of the state to determine and direct the organization of all charities, private as well as public, and advocated state centralization and control of charitable institutions. M. Monod ended his interesting discourse by making a strong appeal to the members of the congress to forward the cause of public relief by giving especial

attention to the disposition of those children who are maintained at public expense and to the provision of medical assistance in the country. If a new branch of public relief is to be organized, the duty of saving the children and taking care of the sick should receive the first consideration.

The debates of the congress were confined to four questions, as follows:

I. The administration and efficacy of outdoor relief, and, as regards such outdoor relief, the proper relation between public aid and private charity.

II. The treatment and education of such children, taken charge of by public or private charity, as can not, by reason of moral causes, be placed under the so-called family system (schools of reform, of detention, and of correction).

III. The character of relief given through the furnishing of employment to the applicant; is it not in its nature the work of private charity?

IV. The relief of tuberculous patients without means.

The first question, namely, "The administration and efficacy of outdoor relief, and, as regards such outdoor relief, the proper relation between public aid and private charity," was discussed by the congress on Monday, July 30. M. Hermann Sabran acted as *rapporteur général*, an official whose duty it is to collate and condense the several papers presented on a given subject, thus preventing the time of the congress being wasted by unnecessary repetitions.

M. Sabran reported that investigations in seventeen countries showed that, although public relief and private charity worked side by side, there existed no intimate relation between them. An effort had been made to establish a relation between these two modes of relief in some cities in England, in some Swiss cantons, in Germany, Denmark, and Moscow; but the instances of exchange and cooperation in relief are rare, whereas the cases are many where no sort of relation exists between the two agencies. This lack of cooperation is to be deplored. Every nation desires the cooperation of public and private charity in order to increase the efficacy of relief and to check abuses; M. Sabran quoted from Dr. Muensterberg, president of the board of public relief in Berlin, the statement that the civil code in Germany encourages the operation of private societies by allowing them to acquire a legal standing by registration. Each society has a board of seven members, and this board makes application to the local administrative authorities for permission to act in their charitable capacity. This permission may be refused in case the State or city authorities decide that the public good may be thereby endangered, or that the society has political or social ends which can not properly be classed as charitable.

Dr. Muensterberg reports that in Germany the administrators of ecclesiastical institutions and of charitable corporations are represented on boards of public charities. In Berlin and other German cities the members of public and private charitable organizations meet together from time to time to determine methods of combined action. There

are also central offices for instruction and aid in the several branches of charitable work. M. Sabran cites the important work of the president of public relief in Berlin in support of his appeal to the delegates to vote for public control of private charity. He next presented the report of Mr. C. S. Loch, the president of the Charity Organization Society of London. In this paper Mr. Loch urged that private charity, seeking the well-being of the individual and of the family, should have a scientific basis, and should not content itself with dealing with superficial symptoms, but should seek to know the deep-lying causes which in each case have produced need of aid, and should work to reestablish the complete independence of the individual and of his family and to restore their social status.

Toward this end alms are not so necessary as a thorough cooperation of charitable agencies. Outdoor relief may be injurious to those who are its object, as well as to their neighbors and friends. Private charity, taking the upbuilding of the family and home as its aim, strives to render them independent of state or private aid and to secure for them help within the circle of their family and friends. This necessitates a large body of friendly visitors, who should labor toward the reestablishment of the family and the individual, and who should bring to their task both science and love. He goes on to say that such bodies of individuals are found wherever organized charity exists, and especially cites as examples of this system London and Boston. In most countries the functions of administrators of public relief are limited; they merely provide material aid to the needy. The workings of private charity are not thus limited. Therefore, Mr. Loch suggests two modes of cooperation between these two agencies.

First. That to public relief should be confided those cases where there seems no chance that the applicant can recover his independence, and that private charity should occupy itself with those whose independence may be restored by wise help, and those whom temporary aid may prevent from again becoming dependent upon either public or private relief.

Second. It might be possible to adopt a more simple division of labor between public and private charity. The administrators of public charity might restrict their aid to the maintenance of public institutions and to the regulation of admissions thereto, so that, except in cases of medical or other emergency, they might surrender to private organizations all out-door relief. This system would present a well-defined field of responsibility for private charitable effort, and, with the responsibility, would create an organization based on scientific principles. A reduction in taxation for public relief would ensue, and private funds would take the place of public moneys. Moreover, the help of friends, relations, and past employers could be more easily obtained than when they felt the public would provide the necessary relief.

All exceptional cases, such as those who have fallen into permanent need, but who, by reason of an honorable life, are entitled to a regular pension, should be confided by the public officials to private agencies.

Another suggestion, based on the Elberfeld system, is presented in this paper, namely, that public officials in their several departments should themselves organize private aid societies to work with them in the performance of their duties, the two branches thus together forming an effective administration.

Inasmuch as M. Sabran's résumé of the answers received from different countries indicated a consensus of opinion that a relation of some sort should exist between public and private charity, a motion was proposed to the congress that private charity should be placed under public control. After speeches for and against, the motion was not carried, the delegates being nearly equally divided on the question. In order to reach an agreement, a motion was proposed and carried that private charity should submit to such control as shall be determined by legislation.

The fourth question, namely, "The relief of tuberculous patients without means," was discussed on Tuesday, July 31, the rapporteurs being Drs. Letulle and Léon Petit. Dr. Petit reported that all doctors demanded for the proper treatment of tuberculous patients—

First, special sanatoria.

Second, the separation of curable and incurable cases.

Third, a fund from which the family of the tuberculous patient may be helped, and to meet the expenses of treatment at the sanatorium. He further said that among the nations Germany had taken the lead in approaching the question of the treatment of tuberculous patients, from the point of view of the protection of society and the mutual interest of the community.

Papers from the United States, Alsace-Lorraine, England, Austria, Argentine Republic, Belgium, Denmark, Spain, Finland, Guatemala, Greece, Hungary, Italy, Japan, Monaco, Norway, Portugal, the Netherlands, Roumania, Russia, and Switzerland testified to the interest taken in the question, and emphasized the need of thoroughly organized aid for the relief of such cases. The congress expressed the opinion that—

First. The organization of a system of scientific relief for tuberculous patients is the only means a country can take to check the disease.

Second. Tuberculosis being a curable disease, every patient, when attacked, if without resources, should be relieved by all the organizations existing for relief of the sick. If these organizations are insufficient for the purpose, they should be added to or modified as might be found necessary.

Third. The relief of tuberculous patients being a social question, it is necessary to secure the cooperation of private charity, mutual benefit associations, insurance companies, etc., in the work of common defense.

Fourth. For the proper coordination of all efforts, it is to be hoped that an international commission on tuberculosis, similar to that which exists in France, connected with the department of the ministry of the interior, may be permanently established. The duty of the commission should be to inaugurate scientific relief for tuberculous patients, through supervision of the enforcement of existing laws, the drafting of necessary new legislation, and the encouragement of all efforts of private initiative.

Fifth. This international commission on tuberculosis should collate all existing documents on the subject, and provide for the publication of such new material as may be found necessary. In brief, it should create the science of relief for tuberculous patients, and should establish the methods of such aid in conformity with the customs, laws, and manners of the various nations participating. The congress also expressed the hope that the various nations would enforce the execution of laws and regulations which concern the healthfulness of dwellings, and especially of industrial establishments and of buildings containing large numbers of occupants, this supervision being for the purpose of diminishing the number of tuberculous patients, and thus eventually diminishing the costs of relief.

The third question, namely, "The character of relief given through the furnishing of employment to the applicant; is it not in its nature the work of private charity?" was discussed on August 1, M. Ferdinand Dreyfus being the rapporteur général. The congress expressed the opinion—

First. That relief through the furnishing of employment affords a needed test to distinguish between worthy applicants and professional beggars, that it operates to restore to the habitually lazy the habit of work and self-respect, and, that, in providing situations for the unemployed, it restores them to a place in the community.

Second. That, although acknowledging the practical efforts in this direction of large municipalities, the work is more effective when dealing with smaller numbers, and therefore that such work should preferably be undertaken, organized, and carried on by private initiative.

Third. That local bodies of public officials can help such work by subventions, by concessions of land, or of buildings, and by the maintenance of close relations therewith on the part of public charitable organizations. The congress voted that the next international congress of public and private charity should study the underlying principle of relief through the furnishing of employment.

The second question, namely, "The treatment and education of such children, taken charge of by public or private charity, as it is not possible by reason of moral causes to place under the so-called family system (in schools of reform, of detention, and of correction)," was discussed August 2, the rapporteur being M. Paul Strauss.

M. Strauss contends that—

First. For the treatment and education of children taken charge of by public or private charity, it is indispensable to establish outside of the correctional administration “*écoles de préservation*,” i. e., schools to which may be committed children of immoral tendencies who are, on this account, unfit to be cared for under the family system.

Second. The authorities having charge of dependent or of morally abandoned children should devote one or more establishments to the observation and detention of difficult or vicious children, reserving the right in case of need to commit them to schools of reform or penitentiaries.

Third. Such “*écoles de préservation*” should be either public establishments or private ones placed under the supervision of the State, the private establishments to be reimbursed by an amount per day for the maintenance of children confided to them by the public authorities.

Fourth. These establishments should, so far as possible, be like ordinary or normal habitations and avoid the defect of placing too many pupils under one management. They should have, as their especial object, instruction in professional pursuits, agriculture, seamanship, etc. The personnel of these public “*écoles de préservation*” should, so far as possible, be filled by administrators of public relief, teachers, and physicians.

Fifth. The congress recommended that judicial authority should, in cases of necessity, commit minors in a state of moral danger directly to “*écoles de préservation*.”

The congress approved the vote of the correctional congress of 1895, urging that the retention of children sent to houses of correction and education should be continued until their majority. The congress recommended that the age of penal minority in countries where it is now fixed below 18 years should be raised to that age.

The resolutions urging international action adopted in the various sections were as follows:

Recommended, that in all countries legislation should make it possible for unworthy or incapable parents to be deprived of the right to bring up their children.

(a) That in every country a commission should be created—to include doctors, hygienists, presidents of child-helping societies and individuals interested in helping children—to provide for special establishments in which poor children freshly attacked by tuberculosis, the anæmic, weak, or lymphatic, shall be subjected to an invigorating treatment to enable them to lead useful lives for themselves and their country.

(b) That means be assured to provide treatment in the mountains or at the seashore for all children afflicted with scrofula or rickets.

Recommended, that in all centers of population, schools, day nurseries, and kindergarten, should work together in the education of children and their families.

That in order to secure cooperation and a better distribution of resources a union of different agencies, whether public or private, should be established for the protection of childhood, each agency reserving its autonomy and independence.

Recommended, that an international commission should be formed in order to unify the statistical publications concerning the insane in different countries.

Recommended, that no Government should lose cognizance of such of its citizens as may have developed insanity in foreign countries and that international conventions should regulate the relief of the divers cases occurring of this nature.

Supplementing the resolutions of the international congress of 1896, urging that the different countries should have an international understanding for assuring aid to aliens, and that the relief of the alien poor, to the extent which is imposed by such international agreement, should be at the charge of the state, the following resolutions were adopted.

First. It is desirable that, in the agreements to be made, each contracting nation, in the interest of its citizens residing on the territory of the cocontracting country, should stipulate—

(a) That abandoned children who are aliens shall be received and cared for on equal terms with native-born children until it be possible to return them to the country of their birth. In the same category as abandoned children are parents condemned to a long term of imprisonment and those whose parents have been judicially deprived of parental authority. Those whose parents are receiving treatment in hospitals, or are under detention for purposes of prevention, or who have received a short sentence, shall in like manner be received and cared for until it is possible to restore them to their parents.

(b) The dangerous insane, whether with or without resources, shall receive, equally with the citizens of the country where they are, such aid as their condition may render necessary. The insane, as soon as they are pronounced incurable, shall be returned to the country of their birth.

(c) Sufferers from acute illness, the wounded, and women in confinement without resources, shall receive equally with the citizens of the country where they are, the care called for by their condition.

(d) The infirm and incurable, as also the aged without resources and judicially declared incapable of self-support, shall receive that assistance called for by their condition until it be possible to return them to their native country.

(e) The able-bodied unemployed and destitute shall be helped as in the cases of citizens of the country where they are.

Second. International agreements may stipulate that the contracting nation either shall or shall not reimburse the state at whose expense aid has been given to its citizens.

Recommended, that in the different countries the Governments shall

encourage the establishment and operation of societies for the aid of aliens.

Recommended, that in all countries a large share should be accorded to women, without distinction of faith or creed, in the control of aid associations, on boards of charitable or analogous institutions, in the administration of hospitals and homes for the needy, and in the house service of charitable institutions.

At the first general meeting of the congress the members of the commission of the next congress were chosen, and consisted of the executive board of the present congress and the presidents of the French and foreign sections, to whom were added the Prince de Casano, of Naples, Italy, and M. le Dr. Louis Kunwald, of Austria.

At the closing session of the congress, on Saturday, August 4, it was voted that the next meeting of the international congress should be held in the year 1905, the choice of the city where the congress is to be held to be determined later by a permanent international committee, in conference with national committees already in existence or to be formed in each country; this international commission to be appointed by the commission of the next congress, constituted as above.

The congress closed with a warm expression of appreciation and thanks to M. Casimir Perier for the invariable courtesy and skill with which he had presided over the deliberations of the congress.

The sessions of the congress were fully attended by the delegates of many nations, and great interest was manifested throughout its deliberations.

REPORT ON THE CONGRESS OF APPLIED CHEMISTRY.

By H. W. WILEY,

Chief of Division of Chemistry, Department of Agriculture.

The congress met in the grand amphitheater of the Sorbonne at 10 o'clock on the 23d of July, 1900. It was opened by M. Henri Moissan, the president of the committee of organization, in an appropriate address, and under the patronage of the French Government. M. Moissan read the address of M. Marcellin Berthelot, the president of honor, who was detained from attendance by illness. The address of M. Berthelot was followed by the report of M. Dupont, secretary-general. The congress then elected the permanent officials, choosing M. Berthelot as president of honor, M. Moissan as active president, and a list of vice-presidents from the different countries represented. The vice-presidents from the United States were Messrs. Doremus, Rising, Chandler, Clarke, and Wiley. The various sections were organized as follows:

SECTION 1. Analytical chemistry; president, M. Muntz, and presidents of honor, MM. Lunge and Clarke.

SEC. 2. Industrial chemistry of inorganic products; president, M. Etard.



VIEW IN HIGHER EDUCATION SECTION, DEPARTMENT OF EDUCATION, GROUP I, CHAMP DE MARS.

Sec. 3. Metallurgy, mines, and explosives; president, M. Adolf Carnot.

Sec. 4. Industrial chemistry of organic products; president, M. Lindet.

Sec. 6. The chemical industry of fermentations; president, M. Durin.

Sec. 7. Agricultural chemistry; president, M. Dehérain.

Sec. 8. Hygiene and medical chemistry and chemistry of food adulteration; president, M. Riche.

Sec. 9. Photography; president, M. Janssen.

Sec. 10. Electro-chemistry; president, M. Moissan.

The congress lasted through the week, and a large number of scientific papers was read before each of the sections. Numerous receptions and excursions were given to the congressists, among which may be mentioned the reception given by M. Leygues, minister of public instruction and fine arts, in the reception chamber of the Sorbonne; by Professors Troost, Haller, and Lippman in the various laboratories of the Sorbonne; and by the president of the municipal council at the Hotel de Ville. Excursions were made to different points of scientific interest, and especially those to the Pasteur Institute and to Chantilly were of more than ordinary attractiveness.

Among the hundreds of scientific papers read only brief notice can be given to those which seem to have the greatest international interest.

In section 1 M. Hanriot raised the question of the assumption as a basis for the atomic weights the value of 16 for oxygen. The discussion of this point was engaged in by many of the members of the section, including Professor Clarke, of this country. At the end of the discussion M. Hanriot proposed the following resolution:

The congress of applied chemistry, believing that the adoption of the atomic weight of oxygen as a basis will lead to a greater stability and to a simplification in a calculation of the atomic weights, wishes to associate itself with the workers of an international commission.

This resolution was unanimously adopted. Professor Clarke proposed the formation of an international committee, having for its object to indicate to chemists the methods which ought to be adopted and the coefficients which they ought to adopt in the different calculations which they make. This proposal was also adopted unanimously.

M. Krause read a paper upon the symbols and abbreviations usually employed in chemistry, in which he took the ground that the symbols Am and Cy ought not to be employed to represent the radicles ammonium and cyanogen, nor should methyl be represented by Me, ethyl by Et, nor phenyl by Ph. He also claimed that the words ester and ether should not be synonymously employed. It was voted to leave that question for further study.

M. Vivier proposed the following resolution:

There shall be established by an international special commission a table of chemical and physical constants, of which the use shall be obligatory upon all official chemists in countries represented in this congress and upon unofficial chemists in cases where they shall be called as experts before any jurisdiction whatever.

This resolution was also adopted.

In view of the fact that at the present time a great deal of pressure has been brought to bear upon our congress to establish a bureau of standards, similar to the Reichsanstalt, at Charlottenburg, the report presented by M. Demichel upon the graduation of instruments of precision is of great interest. This paper and the discussion which followed pertained to the usual character of communications relating to the calibration of chemical apparatus, and is too long for further notice.

Herr Ritter von Grueber presented to the section the work of the commission appointed at the third international congress to secure methods of uniformity, for international use, in the analysis of fertilizers. This report was printed in English, French, and German, and recognized, for the first time, the progress which had been made in the United States in the analysis of agricultural products. The standard American authorities are cited in this report, in conjunction with the standard authorities in Germany and France. Since the adoption of the report pertained particularly to the section on agricultural chemistry, no formal action was taken on this resolution by section 1. It was subsequently presented to the section on agricultural chemistry, and after an interesting debate the proposals of the committee were unanimously adopted.

A firm basis has thus been laid for international agreement in regard to analytical methods and processes relating to the determination of the essential ingredients of fertilizer materials. This agreement is not only interesting from a scientific point of view, but also has far-reaching commercial ramifications, and will result in bringing into close touch the chemists in Europe and in the United States who have to do with imported or exported fertilizing materials.

M. Christomanos entertained the section with an account of the studies which he had made of the transformation of red phosphorus into arsenic under the influence of nitrate of ammonia. This is a theme which, as you know, has lately excited a great deal of attention. Whether or not it be true that arsenic is one of the elements which forms a compound heretofore known as phosphorus it is too early to state. The intimate relations, however, which arsenic bears to phosphorus in all of its chemical reactions show that, whether or not the two substances are forms of some original material or have entirely different natures, they surely resemble each other very much in regard to their chemical deportment.

An interesting subject to our wine makers was that presented by M. Chuard, of Switzerland, concerning the state of sulphurous acid in wines and the functions which this acid performs in wine making and ripening. It has long been known that the deportment of carbonic acid formed by natural fermentation in the bottles, as in the making

of champagne, is quite different from that of carbonic acid charged artificially into a still wine. The study of the deportment of sulphurous acid in wines may throw some light on the interesting relation which gases bear the liquids in solution under pressure or otherwise.

An interesting communication was made by M. Christomanos in giving the data of the analysis of a piece of iron more than three thousand years old, which had been recovered from below the foundation of the marble column of the Acropolis at Athens. M. Christomanos also showed an interesting experiment which perforated pieces of marble without danger of fracture, by means of the flame of metallic sodium, which converted a circumscribed portion of the marble into lime without danger of fracture of the contiguous portions.

Many interesting papers were also presented in section 2.

To those interested in the analysis of food products the paper by M. Lucian on some causes of error in the employment of the bomb calorimeter will prove valuable. If the oxygen used is obtained by electrolysis it is apt to be contaminated with traces of hydrogen, and it is not sufficient to determine the percentage of hydrogen by combustion in a capillary tube of platinum. In the combustion of carbonaceous masses it is not safe to assume that all the hydrogen which may be contained in the oxygen is burned. The quantity of hydrogen burned is a function of the total calories set at liberty by the combustion of the carbon and, consequently, is an unknown function. It is not possible, therefore, to calculate the error in such a case, and oxygen which is entirely free from hydrogen should be employed.

M. Guillet read an interesting statistical paper on the inorganic chemical products of France, in which the quantities of all important chemicals manufactured in France were given.

M. Doremus, although not present himself, sent an interesting paper on fluohydric acid and the fluorids, in which he discussed the production of these important substances.

M. Perron gave an interesting paper on the sulphuric-acid industry, in which all the modern improvements were described. This paper was ably discussed by M. Lunge, who is recognized as the highest authority in the world on sulphuric-acid production.

M. Boudouard gave an exhibition of the different pyrometric methods which are used for high temperatures. Eight different kinds were described in detail.

M. Bloche gave a historical and technical paper on the production of peroxid of barium and peroxid of hydrogen, containing extremely useful information to those engaged in those industries or using their products. The amount of peroxid of barium produced in France is about 1,000 tons annually and the peroxid of hydrogen manufactured amounts to from 2,000 to 3,000 tons. The chief uses of peroxid of hydrogen are for antiseptic purposes and for bleaching.

In section 3 M. Pellet gave the results of his study of the estimation of sulphur in minerals, coals, bitumens, and rubber. The principle adopted is the following: The sulphur and the organic matter are oxidized by fusion with a sufficient quantity of potassium nitrate, variable with the quality of the substance analyzed. Some pure carbonate of soda is added, in quantity usually double that of the nitrate, to moderate the action of the latter. All of the sulphur passes into the state of neutral sulphate or of soluble alkaline sulphate. The melted mass is treated over a flame free of sulphur, as, for instance, an alcohol lamp, by water, filtered, the filtered liquor acidified, some barium chlorid added, heated, and again filtered. Thus the solution of the iron, as in the case of pyrites, is avoided. The precipitation of the sulphate of barium is rapid and complete. The determination can be terminated in less than an hour.

M. Le Chatelier presented an elaborate report on the state of our knowledge of the different allotropic conditions of iron and steel.

M. Barthelemy presented a résumé of legislation relating to the storing and transportation of explosives in different countries. He cited the necessity of getting a special class of explosives which are perfectly safe and which can be admitted for transport by express in cases of urgency.

M. Le Chatelier also presented a new microscope for the study of materials and for photographing the same. The description is too long for insertion here.

In section 4 M. Thomas presented a paper on viscose, a form of cellulose, which can be used for various purposes, as, for instance, sizing paper, decorative painting, adulteration of rubber, fabrication of thin pellicles, threads, celluloid, ethers, acetates, etc.

M. Guillemare stated that all green plants digested with a weak solution of caustic soda yielded their chlorophyll in the form of chlorophyllate of soda, and for this reason he believed that chlorophyll should be known by the name of chlorophyllic acid.

M. Pierron gave an account of the catalytic heating action of platinum from the time of Humphrey Davy to the present.

M. Arachequesne called attention to the fiscal regulations existing in France and other countries concerning the use of alcohol in the arts, and the hardships which manufacturers had to undergo by reason of these regulations and the requirements for denaturalization. He presented some resolutions, which were adopted, calling upon the different Governments to modify their regulations in such a way as to permit the use of pure alcohol in certain cases, and where denaturalization was required to make it as little expensive as possible.

M. Reid presented numerous specimens of a product known as velvrlil, intended to replace rubber and gutta-percha in a certain number of their applications.

M. Ferdinand Jean presented a study of the rôle of microorganisms in the liquors of the tannery and in skins and gave his experience with a number of antiseptics.

M. Kostancki gave a résumé of his work upon vegetable coloring matters.

M. Jules Wolff gave results of the analysis of the roots of chicory. The quantity of inulin amounts to 15 per cent in the fresh root, but the inulin disappears almost completely during torrefaction.

In section 5, which was the most numerously attended of any of the sections of the congress, the papers were chiefly of a technical character. Two papers were read by delegates from this country in this section, one by M. Wiley, showing the influence of temperature on the specific rotation of sugar, and the other by M. Wiechmann, taking the ground that temperature exerts no influence on specific rotation. This question of the influence of temperature on the specific rotation was also discussed before the section by M. Pellet, who gave an elaborate mathematical discussion of the data which he had obtained in his investigations.

This theme is particularly interesting to American chemists, because the great influence of temperature on specific rotation was first pointed out by Andrews, who, at that time, was connected with the Massachusetts Institute of Technology. The matter is of such importance, both scientifically and commercially, that it occupied the chief part of the time of the international committee on unification of methods of sugar analysis. In the meeting of this committee the data relating to the influence of temperature on polarizations were presented at length by M. Wiley, of the United States; M. Sachs, of Belgium, and M. Brodhun, of Germany. The only advocate of the stability of specific rotation, independent of temperature, was M. Wiechmann, of the United States. The opinions of the majority were embodied in a resolution which finally passed the international committee without a dissenting vote. This resolution was to the effect that the saccharometer should be adjusted as nearly as possible to a temperature of 20° , but when this is not a convenient temperature the adjustment should be made at other temperatures near that of the usual temperature of the laboratory where the polarizations are performed; and further, that all polarizations should be performed at, or as nearly as possible, the temperature at which the instrument is adjusted. The influence of temperature on specific rotation has now been so thoroughly worked out that we may say without hesitation that the points established by Andrews eleven years ago are now fully accepted by practically all the investigators of the world.

I, perhaps, in this connection might also call attention to the fact that the two important international committees on which I served as the delegate from the United States have made more progress in their

work and received more approval from the congress than any other committees which have been appointed. I refer to the international committee on methods of fertilizer analysis and the international committee on unification of methods of sugar analysis. While both of these committees have been continued for further work, the objects for which they were established have been practically obtained, and the chemists of the world are now able to stand on a common foundation in two important branches of chemical analyses. This fact shows how easy it would be to unite the methods of chemists all over the world on all points connected with analytical processes.

In section 6 there was nothing brought out in regard to fermentation as interesting as the paper read at Vienna by Buchner on fermentation without yeast.

M. Effront, the eminent Belgian authority, presented a communication on the rational use of antiseptics in the distillery and showed that there were four factors to be considered, viz, (1) the quantity of antiseptic necessary to moderate or arrest the development of ferments; (2) the quantity of antiseptic which enfeebles the yeast itself; (3) the quantity to be used without enfeebling the active substance of the malt, and (4) the influence of antiseptics upon the malts.

M. Barbet presented a communication upon the use of pure yeast in the distillery after sterilization, a subject which is now creating a great deal of interest. You are all familiar, doubtless, with the imitations of the flavors of wines which are produced by the fermentation of malt extracts with ferments from the wine cellar. The production of particular flavors in fermented beverages, as well as in those which are distilled, will doubtless in the near future be controlled at will by previous sterilization of the mass and the employment of especially cultivated ferments which produce distinctive flavors.

Naturally, the section in which I was most interested was section 7, on agricultural chemistry. The subjects discussed ranged from the character of the soil to the most difficult problems of vegetable physiology.

M. Deherain, the distinguished chemist of the agricultural station at Grignon, read a paper showing the chemical and physical effects of the cultivation of a soil in which he showed that the aeration of the soil and the destruction of weeds were not the principal points to be kept in view. The principal value of cultivation is found in the relation of cultivated soils to moisture. Soils which tend to be too wet are dried out more readily by cultivation, while those which suffer from drought have their water retained by the same means. Soils should be cultivated every year if possible. Water charged with carbonic acid dissolves chalk and causes the clay to lose its coagulability.

M. Wiley presented a paper to the section on the economic uses of cornstalks, showing the immense quantity of valuable food material

for cattle destroyed annually in the United States by the burning of the stalks of indian corn. He showed how the cornstalk becomes one of the best absorbents for blood and molasses, and thus would form the basis of some of the most valuable manufactured cattle foods.

M. Schneidewind laid before the section some of the results obtained at the agronomic station at Halle on dentirification and in the transformation of soluble nitrogenous compounds into insoluble.

In section 8 interesting communications were made in regard to the falsification of wines, and it was brought out in the discussion that the vin ordinaire obtained at Paris was almost wholly artificial in character, about 1 barrel of low-grade red wine serving as a basis for at least 3 barrels of the material placed on sale.

M. Berger gave the results of his study in the sterilization of water by peroxid of chlorin. This compound is of such great activity that a quantity less than a milligram suffices to sterilize a liter of water.

M. Ogier states that it is certain that the composition of water treated is not modified in an unfavorable sense by the peroxid of chlorin, and, in so far as mineral matters are concerned, its use does not produce an increase, except in an infinitesimal way so small as to escape detection by analysis. The water which has been sterilized is easily freed from any excess of peroxid of chlorin, so that it may be regarded as an irreproachable agent from a hygienic point of view.

M. Brevans discussed the detection of saccharin in alimentary products, in which the method of Remsen was given the preference. As is well known, the use of saccharin is prohibited in most European countries. Its use in this country by diabetic patients has grown to large proportions. It is extremely doubtful if it serves any useful purpose, while it is quite certain that it hinders digestion. Its general use should be regulated by law and physicians should be admonished not to prescribe it promiscuously to their patients, and never to any particular one for any length of time.

M. Halphen gave a report on the adulteration of oils and the methods of detecting them.

MM. Abelous and Gerard presented a paper in which they described a soluble ferment found in animal tissues producing nitrates. It exists in the greater number of organs, although the proportion is unequal. It not only produces nitrates, but decolorizes the blue of methylene. The ferment has its maximum activity at between 40° and 50° and is destroyed at about 71° .

M. Moliere pointed out the conditions in which it is necessary to work to obtain a regular determination of glycogen in normal and pathological tissues, and pointed out the steps necessary to extract the glycogen from the tissues and precipitate the nitrogenous matters, and finally to separate the crude glycogen. The real quantity of glycogen is determined according to the weight of suboxid of copper given by the crude

product hydrolized by sulphuric acid of 2.5 per cent strength, and the heated product permitted to act upon Fehling solution.

The whole subject of the determination of glycogen has lately been studied in the Department of Agriculture by M. Bigelow and his assistant, Haywood, with the result of showing that the method which is described above, and which has been practiced for many years, is not reliable. The results of these investigations will soon be published for the information of chemists interested in the determination of glycogen.

The banquet tendered delegates of foreign countries and of learned societies was held at the Hotel Continental on the evening of July 28, and was a fitting social event after the week of hard work to which the congressists had been subjected.

One of the most pleasant features in connection with the congress was the unveiling of the statue of Lavoisier, in the Place de la Madeleine, under the auspices of the French Academy of Sciences. A beautiful canopy had been erected for the foreign delegates and invited guests, and, although the day was exceptionally hot, there was no lack of interest in the exercises. Nearly all the members of the congress were present to render honor to the great founder of their science, and it was in the midst of an audience composed of those learned men of the Academy of Sciences, of the representatives of the other branches of the institute, and of numerous learned societies of France and foreign countries that the statue of the founder of the science of chemistry—of immortal memory, as Wurtz has said—was unveiled. This beautiful piece of sculpture represents Lavoisier with uplifted right hand in the attitude of delivering a lecture to his students. The left elbow is supported upon a lot of apparatus representing the original forms used by Lavoisier in his immortal discoveries. The piece of statuary bears the simple inscription, "Lavoisier, 1743-1794." This piece of sculpture is the work of one of the greatest of contemporaneous artists, Barrias. It can be said without exaggeration that it adds greatly to his glory. Barrias has shown us the master in all the majesty of his genius, and, at the same time, in the garb of the philosopher and incomparable experimenter.

Orations were pronounced by Berthelot (in his absence read by M. Moissan) and by Leygues, the minister of public instruction. The discourse of M. Leygues was especially eloquent. He closed his address with the following words:

The invincible force of affairs ends always in triumph. The scientific institutions, which seemed to have disappeared forever with Lavoisier, soon sprung up again vivified and rejuvenated by the powerful breath of the Revolution and remain reflected in our glorious institute of France. Among us the rights of free thought are imprescriptible. Nothing can prevail against them. Lavoisier was brave in the face of death. "I have obtained," he wrote to Devillers, "a career tolerably long and especially very happy, and I believe that my memory will be accompanied with some regrets, possibly even with some glory. What could I desire more? The



UNITED STATES SECTION OF SECONDARY AND BEGINNING SUPERIOR EDUCATION, ETC.

events in which I find myself enveloped are probably going to save me the inconveniences of old age. I will die perfectly whole. That is an advantage which I ought to count among the number of those with which I console myself." A single word is to be remarked in these last words. Men like Lavoisier never wholly die, and the scaffold only serves to build a pedestal upon which grateful generations will sometime erect their image.

To my mind there is no happier way of stating the present attitude of the French people to those great men whom the fury of the Terror conducted to the scaffold a little over a hundred years ago. To me there are no more interesting works of art in the great city of Paris, the mother of modern art, than the two statues of two men beheaded during the revolution—Danton, representing the spirit of pure democracy, and Lavoisier, representing the spirit of pure science. His judges would not listen to his plea for a few days more of life to finish some scientific work upon which he was engaged. They hurried him with all haste to the scaffold and now the whole scientific world unites in honoring his memory, which his ignominious death has only served to make dear and immortal.

REPORT ON THE CONGRESS OF CHRONOMETRY.

By GEORGE F. KUNZ, *Delegate.*

This congress was opened on July 28, 1900, and continued its meetings under the chairmanship of Mr. Caspari, in the Astronomical Observatory at Paris. Mr. Caspari paid homage to the memory of the illustrious Philips, through whom the theory of regulation had taken its place by the side of the other exact sciences. The director of the Nice Observatory, M. Cornu, showed the working of his great pendulum, about 4 meters in length, used as a clock, and also stated that, in principle, he was against compensation.

Mr. Faddegan, delegate of the Dutch Conference of Clockmakers, discussed the question of compensation of clocks, taking as a basis the results obtained by calculation, which are explained in a report presented by him to the congress. He considered compensation with mercury too complicated for strict calculation, and explained the advantage of a combination of two metals. He thought, however, that for scientific use it would be preferable to reject compensation, and then to calculate the variation for a homogenous timepiece, of which he gave the physical property.

Mr. Dibisheim, a Swiss manufacturer, compared different levers, especially the anchor lever with the chronometer lever.

Mr. Guillaume, of the International Bureau of Weights and Measures, called the attention of the congress to the introduction of a system of uniform sizes in schools of chronometry; he wished that the units applied in electricity should be used, the kilogram and the meter being too large. After having explained in a few words

the definitions of margin, weight, etc., he showed that the moment of inertia of a balance increases in the fifth power of a linear dimension, and by taking the root of each of the units obtained in this way he obtained a series of numbers.

He proposed further to number the spires in such a way that the time of oscillation is found by dividing the two numbers.

He wished the system of lines to be replaced by even numbers of millimeters.

A commission was chosen by the congress to examine these proposals—the results of which will be published in the detailed report of the congress, as well as those of another commission, who are to study the formula of action. The congress also proposes to make tests for the observatories which furnish (bulletins of March) certificates of the time-keeping qualities of chronometers.

These rules will be found in the same works.

Dr. Kaiser, inspector of nautical instruments of the Royal Dutch Marine, read a paper in which he showed that the differences in the prices of chronometers are of slight importance, and that chronometers which are carefully regulated and adjusted for a considerable time improve with such care, a fact which Messrs. Caspari and Millouin had also observed.

Mr. Guillaume laid before the congress some remarkable properties of nickel steel, and urged the advantage that would be obtained by constructing compensation clocks of this material.

Mr. Féry, professor of physics, showed and explained to the congress his clock, which runs in the cellar of the observatory. This clock has a restitution of living strength by an electric apparatus for restoring the lost energy of the pendulum. The impulse is given by a magnet fitted to the clock. This current is supplied by induction, and is of constant strength.

Mr. Maillard, clock maker, working with the Levoy firm, showed wheel mounted with ball bearings, and explained the advantages of this arrangement.

Mr. Thury, constructor of electric instruments, showed instruments in use for rotating parallactic instruments.

Mr. Poullier exhibited a simple piece of mechanism for utilizing the tide in maintaining the working of a clock. Mr. Brillouin, chief lecturer at the *École Normale Supérieure*, showed the results given in his report, "Laws of the variations of amplitude of the pendulum of time-pieces," Paris, 4°, 1899, Society for the Encouragement of National Industry.

Mr. Gredxels, of Brussels, showed a table enabling one to go from the decimal system of gradation to the usual sexagesimal system. Mr. Guilleminet showed several watches with decimal divisions on the face. After a lengthy discussion the congress decided to follow the decimalization of time only in scientific matters.

Mr. Lippman, member of the Institute, spoke on a unit of time based on electrical phenomenon, and Mr. Schmidt, Swedish engineer, addressed the congress in an interesting manner on his chronograph, designed to measure very minute intervals of time, as low as one five-thousandth of a second, exhibited in class 96, Exposition Universelle de Paris.

Before adjourning the congress nominated a permanent committee, who will occupy itself with the work and undertake to make all the preparations for another congress, to be held at some future time.

Besides myself, the other United States delegates to this congress were Prof. John K. Rees, professor of astronomy, Columbia University, of New York City, juror of class 15, Exposition Universelle, Paris, and Alfred G. Stein, of Patek Phillipe & Co., of Geneva and New York, and juror of 96, Group XV, Exposition Universelle, Paris.

REPORT ON THE COLONIAL CONGRESS.

By FRANK D. HILL,

United States Consul at Amsterdam.

The International Colonial Congress of 1900 held its sessions from July 30 to August 6, 1900, at Paris, at the rooms of the Geographical Society of Paris, 184 Rue St. Germain. In accordance with the terms of the programme meetings were held daily, except the Sunday intervening, consisting of two sessions, at 10 a. m. and 3 p. m., respectively.

At the meeting on July 30, the date of the assembling of the congress, the president of the committee of organization, A. Bouquet de la Grye, and the vice-presidents of the committee of organization, Prince Roland Bonaparte and Gauthiot, were made vice-presidents of the congress, and Camille Guy was elected as secretary-general of the congress. These gentlemen are citizens of France, Anatole Bouquet de la Grye being a member of the Institute and Bureau of Longitudes, Prince Roland Bonaparte president of the central commission of the Geographical Society of Paris, Gauthiot secretary-general of the Society of Commercial Geography, and Camille Guy an official of the colonial office of France.

The official delegation of the French Government consisted of officials from the minister of foreign affairs, interior, war, colonies, and agriculture. The United States of America, Hungary, Mexico, Russia, Siam, and northern Australia were represented by official delegates. In addition to the official delegation from the United States, Dr. Gustave Nederlein, of the Philadelphia Museums, was present as a member of the congress. Among the companies and societies supporting the congress the American Geographical Society may be enumerated.

It is deeply to be regretted that the Governments of Great Britain and the Netherlands did not take part officially in the deliberations of

the congress through representation that could speak authoritatively on vital and burning questions of colonial policy and administration. English and Dutch experience has been garnered through a long stretch of time, and the capacity of administrators of both nations to deal with inferior peoples has been demonstrated.

The proceedings of the congress were conducted in the French language, and the subjects of the papers read confined to French experience in the main.

Papers were read on the following subjects: "Emigration and immigration;" "Colonial possessions;" "River and canal navigation;" "Colonial legislation; what it is and what it should be," "Main international sea routes;" "Penal colonization;" "Registration in Madagascar and Tunis, and relation of the same to the Torrens act and the Wakefield system;" "Large-scale concessions;" "Colonial railways;" "The extent in which laborers from the mother country may be employed in the colonies;" "Colonial banks;" "What shall be the leading industry of the colonists?"

Précis of these papers are appended.

Visits were made at stated times by the congress to the Colonial Expositions, French and foreign. Social functions were curtailed because of the announcement of the death of the Sovereign of Italy. The luncheon at the Colonial School and receptions held were pleasant affairs, and attended by some of the members of the congress.

There were about 700 adherents to the congress. At its first meeting the work of the congress was divided into three sections—that of labor, that of ways and means of communication, and that of governmental systems in the colonies. On July 30 and following days in the first section the following papers were read:

FIRST SECTION.

A. "Emigration and immigration" were treated by Mr. Moufflard, chief of the section of commerce in the Colonial School of France, who discussed the various means of increasing immigration to the colonies by such devices as free passage, land grants, exemption from military service, etc. He dwelt on the necessity of private initiative to second the efforts of the Government. The reporter opposed encouragement to emigration of Chinese on the ground that they were competitors of the natives and did not remain in the colonies. Preference should be given to emigrants from British India, where a condition of overpopulation and frequent famine prevails. He thought that if the laws should be administered upon a liberal basis, England would not place obstacles in the way of such of her subjects expatriating themselves. His advice was that the Governments should favor immigration by making liberal grants and providing free transportation of intending emigrants at the Governments' expense.

B. "Penal colonization" was discussed by Mr. Arthur Girault, of the law faculty of the University of Poitiers, who set forth the view that penal colonization should be made only with the consent of the inhabitants of the penal colonies, and when transportation takes place the criminals should be employed in public works and even be let out to contractors. Mr. E. Lavalle, civil engineer, who supported the discus-

sion of the paper, stated that he had worked in the penal colonies under such circumstances that wages had been paid to the Government for the services of the criminals. He found the criminals useful and gave them a small premium for their labor, as the Government furnished them food for light work or no work at all.

The congress, without committing itself to the advocacy of penal colonization, considered it desirable that the following considerations prevail:

1. Certain regions should not be made penal colonies, but penitentiary transports should be sent out temporarily to those places where labor is lacking or important public works are to be undertaken.

2. The criminals should be employed in work only of plain usefulness.

3. Criminals should not be employed in avocations attended with peculiar difficulties, dangerous to health or body, which would not be undertaken by free labor.

4. Criminals should be employed if possible on works of public utility.

5. There should be placed at the disposition of the colonies or municipalities, to be employed upon public works, criminals without expense to the public bodies.

6. To suppress radically concessions to condemned criminals.

7. The penal establishments should be placed under the control of the governors of the colonies, with whom shall rest the decision upon what work criminals shall be employed.

8. Stringent measures should be taken against individuals condemned to reside in the colonies without being compelled to work from falling into vagabondage.

C. "Agricultural colonization on a small scale" was discussed by Louis Simon, delegate from New Caledonia to the superior council. He states that everywhere, with water and a healthy climate, the Government should assist small farmers who have means even to establish themselves upon a small scale. In New Caledonia 25 hectares are given out to each man who is able to work, and the greater part of such a tract is planted with coffee trees. The congress came to the conclusion that it was to the interest of every country to assist in the colonies the development of agricultural colonization on a small scale.

D. "Choice of labor in colonial employments." This paper was read by Mr. Augustus Bernard, professor in the Superior School of Letters in Algiers and director of "Questions Diplomatiques et Coloniales." He classifies colonies into two classes, those which have sufficient population and those which have not sufficient. In the former there is not always a due inclination on the part of the population to devote themselves to labor, either on account of European prejudice against manual labor or because they are not urged on by their wants. Prosperity follows labor, and civilization prosperity. He states that the employment of coolies was in many cases slavery in disguise. The congress concluded that the preservation of the native races in tropical colonies should be promoted by every means possible, notably by international measures respecting alcohol and opium. Every measure favorable to the recruiting of manual labor in the colonies themselves should be encouraged. The employment of indigenous labor should be made as against that of imported labor, even in cases when, from the European standpoint, such action infringes upon ideas of personal liberty. When exotic labor must be employed each government should seek sources of supply in its own colonial dominions. Exotic labor should be drawn from countries whose climate and manners and customs are similar to those of the colony. Contracts should be entered into according to the regulations recommended by the International Colonial Institute (session at Brussels, p. 357). A refusal to abide by the terms of the contract shall involve a penalty.

E. "The measure in which laborers from the mother country can be employed in the colonies," formed the subject of a paper read by M. Zimmerman, counselor to the direction of colonies at Berlin. The conclusion arrived at was that colonization of the white race on a large scale in tropical countries, except on high plateaus, must always be considered as dangerous.

F. "The work of civilization accomplished by the French missionary explorer, M. Colard," was reviewed by Capt. Alfred Bertram, of Geneva. The influence that can be exerted in raising inferior peoples to a higher plane of life by one man's personality was well set forth.

SECOND SECTION.

A. "Navigation of rivers and canals" was the subject of a paper read by Mr. Albert Wahl, engineer of naval construction (France). The paper discussed navigation on the Niger, and stated that England, after obtaining a complete monopoly of the Niger company, had thrown open its free navigation to all the world. The conclusion of the congress was: Considering that navigable waterways provide the most economic and rapid means of communication between the metropolis and the colonies; that, however, many of these commercial ways have not received, either in France or in the colonies, such aid as to fit them for the demands of modern navigation; that the waterways belong to the public domain.

The congress was of the opinion that the public authorities in the public interest should stimulate and encourage private effort to improve the condition of the navigability of the waterways in France and the colonies; and that, in default of private initiative, the public authorities should take the task upon themselves.

B. "Packet service and telegraph lines." This was the subject of a paper read by G. Borelli, a merchant of Marseilles. At its conclusion the congress recorded its opinion that free ports should be established in all countries where commercial freedom does not prevail; that the governments interested should study means whereby the Suez Canal may be made free, and should establish for its surveillance an international commission after the manner of the Danube commission.

C. "Colonial railways" was the subject of a paper read by Col. A. Thys, ordnance officer of His Majesty the King of the Belgians, and director of the Congo Railway. At its conclusion the congress agreed that it was the duty of the home Governments to foment and to favor the establishment of colonial railways in order to develop the colonies, and to that end to make the necessary sacrifices involved in guaranteeing the security and return of the capital employed therein.

D. "The great international sea routes" was the subject of a paper read by Colonel van Zuylen. The speaker reviewed the increased impetus given to commerce by the construction of the Suez Canal, and dwelt also upon the pressing importance of the early construction of an isthmian canal joining the waters of the Atlantic and Pacific. The conclusion of the congress was—

1. That maritime communication through Central America, between the two oceans, is of the greatest importance to the colonizing nations and for the colonies.

2. That it is for the interest of all commercial and colonizing nations to contribute to the building of a good canal.

3. That this end would be attained beyond doubt by a guaranty during the first twenty years of its exploitation of an amount proportioned to the respective maritime movement of each by the different states of the entire world.

E. E. Levat, engineer, gave a "résumé of the labor problems encountered in building railways in French Guiana." He agreed with the conclusion arrived at and contained in the paper of Colonel Thys, as above.

THIRD SECTION.

A. "Colonial legislation; what it has been and what it should be." This important paper was presented to the congress by M. Chailly-Bert, secretary-general of the French Colonial Union. His paper was a strong presentation of the necessity that colonial matters be left to the colonies themselves, and the desirability that the interference of the home government in colonial questions should be restricted to the lowest minimum. The conclusion of the congress was that colonial legislation should

be enacted in the colonies themselves, and not in the mother country, power of veto being reserved to the latter.

B. "Large scale concessions" was the subject of a paper read by Marcel Dubois, professor of geography at the Sorbonne. The thought underlying this paper was that large-scale concessions are, as is shown by history, prejudicial to the best interests of the colonies and the native races. The congress indorsed this view.

C. "Colonial banks." This was the title of a paper read by M. Franconie, professor of the French Colonial Union, and attached to the Bank of France. He made the following points:

1. That it is useful that colonial loans be made by the colonies themselves. In that way colonies cease to rely upon the mother country and also have a direct interest in the financial administration of the colonies themselves.

2. The varying rates of interest in the different colonies will thus be an accurate measure of the situation of each.

3. In case of war each colony is thereby responsible for loans contracted by it. A case in point is the action of the United States at the conclusion of the Spanish-American war with respect to the bonds issued by Spain in Cuba's name.

After a short debate the following conclusions were arrived at by the section:

Concerning the public credit, the governments ought to encourage the efforts of the colonies in making loans directly with or without the guaranty of the mother country for ports, canals, and railways. Addition by M. Bonard: The home governments shall reserve a right of control.

Concerning colonial banks, colonial credit must not be governed by a single metropolitan bank, but by local banks who understand how to operate in accordance with the wants of the country where they are established. The governments must encourage the establishment of colonial banks in those countries where they do not exist, and control their operations without interfering with the domestic economy of the institution. Special care must be taken in the choice of directors of colonial banks, who must possess physical, moral, and intellectual qualifications in order to fill the delicate mission intrusted to them. The establishment of a monetary régime appropriate to the wants of the native population and the European colonists must be one of the principal occupations of the colonial banks, and must be in accordance with the demands of metropolitan government and the neighboring colonies.

REPORT ON THE CONGRESS OF COLONIAL SOCIOLOGY.

By FRANK D. HILL,

United States Consul at Amsterdam.

PROGRAMME OF MEETINGS.

Monday, August 6, at 10 o'clock. The congress met at the hour specified, when the work was divided into sections. The following papers were read on August 7 and following days:

SECTION 1. *Political and juridical condition of the natives.*

1. "In what measure and under what conditions may native administrative organisms be maintained?" This paper was read by M. van Kol, member of the second chamber (Parliament) of the Netherlands.

2. "How and by what means may the native population defend its rights and make its grievances effective before the local authorities?" Reporter, M. Alexander, honorary secretary of the International Law Association.

SECTION 2. *Material condition of the natives.*

"Measures necessary to preserve the race, to prevent physical degeneracy, and to better the condition of the natives." Reporter, M. le Docteur Georges-Treille, inspector-general (en retraite) of the sanitary service of the colonies (French).

SECTION 3. *Moral condition of the natives.*

"Means necessary to elevate the intellectual and moral level of the natives." Reporter, M. de Sassure.

On August 11 there was a general meeting of all the sections, when there was discussion and a vote taken respecting the recommendations of the various sections.

The congress was organized on August 6 by the selection of Le Myre de Vilers as president and Paul Leseur as secretary-general. Particular attention was called to the Dutch method of administering colonies, to wit, that of permitting the natives to administer their own affairs, under European guidance and tutelage, which has shown itself to be correct, and is, indeed, the only system that meets the demands of advanced sentiment in the home countries in this period of political enlightenment. The old colonial policy of enforcing a régime concocted by cabinets of the superior race, living in the atmosphere of a European capital, and through officials sent out from home, imposing foreign laws and ideas upon the natives without respect to local customs and the existence of the local hierarchy, is hopelessly discredited as belonging to a period in which colonies were regarded merely from the standpoint of home interests. Study of colonial problems has demonstrated that existing colonial institutions have, like all other political devices, a *raison d'être*, and that they correspond to the needs and aspirations of the peoples among whom they are found, and that they are, in fact, a logical evolution from conditions that have existed or now exist in the colonies.

At the conclusion of the paper M. van Kol submitted the following resolution:

The congress, considering that the well-being of the indigenes, their development—physical, intellectual, and moral—ought to be the supreme end of colonial politics;

Considering that this evolution of indigenous society can only gradually take place, being the natural consequence of economic changes, which decide the degree of civilization of a people;

Convinced that the only rational method is that which consists in adapting, as far as possible, the colonial régime to existing institutions, the laws and customs of indigenous races, so as to ameliorate and make to disappear injustices, and in adapting these institutions to the new needs which shall arise;

Expresses its desire that colonial policy should tend to the maintenance of indigenous administrative organisms.

This was adopted by the congress.

The following resolution was adopted by the congress after the presentation of Mr. Alexander's paper:

The congress judges that the following means are most efficacious to enable the natives of the colonies to defend their rights and to make their grievances effective:

1. The unimpeded exercise of the right of petition without regard to formal requirements in the manner of their presentation.



6. A ROOM IN THE UNITED STATES NATIONAL PAVILION.

2. Free access to the courts.

Besides, the congress desires that the natives in European colonies gradually understand that when the extent and measure of their education and independence is sufficiently advanced the right of suffrage will be given to them, in order to protect their just interests by their representation in the legislative and executive bodies and in the municipal councils.

At the conclusion of Mr. Girault's paper the following resolutions were adopted:

A.—CIVIL LAW.

1. Acquaintance with native judicial institutions presenting from a political as well as a scientific point of view a considerable interest, it is desirable that governments foster and encourage the study of these institutions by competent men.

2. So far as concerns the family and property organization, it is desirable to leave to the natives the benefit of their customs, provided that these customs are not incompatible with the respect due to human life and human liberty.

3. It is desirable to maintain native jurisdiction to decide civil questions among the natives under a surveillance more or less strict, as circumstances demand. In case of organizing new jurisdictions, a place should be given in these new courts to the native element.

4. It is not desirable to encourage natives to solicit individually the benefits of European judicial institutions.

5. It is desirable to codify the civil institutions of the natives, but on condition not to attribute, at least provisionally, to these codes a value purely doctrinal. These codes ought to be the local customs simply translated into law without alteration.

6. By way of exception, respecting the law of contract and commercial law, it is, on the contrary, desirable to make for the natives a code approaching as far as possible European legislation, with certain reservations, of which the following are the principal:

(a) Labor contracts should be the subject of special and detailed regulations guaranteeing liberty to the native laborers and assuring them of just treatment.

(b) The law of evidence should be in harmony with the social conditions and degree of enlightenment of the native population.

(c) Special regulations should be enacted to assure due execution of contracts entered into by the natives, and for this purpose to regulate corporal restraint.

7. Suits between individuals of different races should not be tried before European courts, but by mixed tribunals, composed, as far as possible, of an administrative president, of a European magistrate, and a native judge.

8. The European authority once established, it is desirable to begin the work of determining the civil state of the natives, making stringent regulations as to records of births and deaths.

B.—PENAL LAW.

9. The making of a penal code for the government of the natives must be taken up upon the foundation of the colony.

10. This native penal code should not be a mere copy, with modifications, of an European code. Each offense should be defined *de nouveau* and its gravity determined. What is prohibited to Europeans may be open to natives, and vice versa. The gravity of the offense may vary according to the race of the author and that of the victim.

11. The burden of rendering justice to the natives in repressive matters ought to be confided in the first instance to the colonizing power, even when the victim of the offense be a native, save when the right of jurisdiction is delegated to the native authorities.

12. It is desirable to establish, in order to render justice to the natives in penal matters, a judicial authority distinct from the administrative authority.

13. A single administrator may have the power to repress petty offenses conformably to law.

14. The legislator may leave to the judges according to circumstance the adoption of procedure in penal matters when the natives are affected. Always the usage of the question ought to be and to remain interdicted.

15. A penitentiary régime different from that applicable to Europeans ought to be established for the natives.

After Dr. Georges Treilles's paper had been read the following conclusions were presented by Mr. Paul Leseur, and adopted:

Inasmuch as the prosperity of tropical colonies is intimately related to the maintenance and the development of the native population, the congress expresses its desire that the declarations contained in the acts of 1890 and 1899, to restrict the traffic in spirituous liquors, may be made general, and that a diplomatic agreement may be entered into with respect to all the colonies where a native population exists.

A subsidiary resolution was adopted, as follows:

For the colonies which possess local representative authorities the governments shall impress upon these authorities the dangers of the use of alcohol, and shall exert upon them moral pressure to adopt measures with the object of reducing the use of alcohol.

On request of M. van Kol, the second section adopted the following addition:

It is desirable that measures be taken to prevent or restrain the use of opium.

The following resolutions were also adopted:

It is desirable that colonizing powers, each one as concerns itself and in the sphere of its respective interest, shall take measures with respect to the native labor and make regulations to the end that laborers employed either on public works or in private enterprises shall not exceed their physical forces. These measures may rest on the following bases: (a) The legal conditions of the contract of hire of native labor shall preserve individual liberty. All contracts of hire of service shall be made and concluded according to the principles of European jurisprudence. (b) Eight hours shall constitute, as far as possible, a day's work. (c) A ration, when it shall be furnished to the native laborers, shall be calculated on the basis indicated in the present report, so as to maintain health and to save the vital forces. (d) Every enterprise, public or private, ought to provide medical assistance to natives who fall ill or who are injured in the performance of their tasks.

With respect to leprosy.—Barracks must be built to admit every leper who might infect the surrounding places. These barracks must be distant from inhabited centers. They must be provided with hygienic care by the government, and, if required, must be provided with food according to their needs. The local government must inform the respective governments of the departure from the colonies of Europeans suffering from leprosy.

Syphilis.—That the native population be reminded of the great danger of that disease, and that they will be taken up without charge into hospitals.

Smallpox.—A public vaccination service must be organized in the tropical colonies.

The supervision of the roads in European cities, villages, tatas, and other native cantonments must be intrusted to a sanitary service. The relementation must tend to compel the native, under punishment, to stop the soiling of the roads and rivers. In the districts which are under direct administration the sanitary measures will be enforced by European authorities.

The physicians who have charge of vaccinations must indicate to the authorities the ways and means, as also the usefulness of taking precautions to prevent local epidemics.

In case enteric fever appears in any district, and when an abnormal mortality at certain points is brought to the notice of the authorities, the public hygienic service shall without delay send to those places a technical functionary, who shall take the necessary steps and measures to limit the epidemic and to prevent the spreading of the same. The colonial hygienic service, as a public administration, will be managed by technical functionaries. Establishment or extension of schools for educating native physicians is also recommended.

At the conclusion of the paper read by M. Noueton on "The forced labor system," called the "corvée," the following resolutions were adopted:

Considering that the employment of the "corvée" presents only inconveniences, that it is a cause of diminution of the native population, and at the same time a danger to the public tranquillity by the discontent that it causes, and considering that it is free labor and paid labor that produces results,

The congress expresses its desire that the colonizing powers suppress the corvée in the various avocations to which it is devoted.

At the conclusion of the paper of M. de Peyre on "How to develop among natives sentiments of foresight and economy," the following resolution was adopted:

Colonial governments must assist to establish native institutions having for their object to provide for the future mutual assistance, and, if necessary, give assistance to these institutions under its supervision.

At the conclusion of M. Saussure's paper on "The means necessary to elevate the intellectual and moral level of natives," to which especial attention is called as an able presentation by an expert of methods for the solution of problems which now, or will presently, face us in the Philippines, the following resolution was adopted:

That the political policy should tend above all to ameliorate the means of existence and the organization of labor among the natives which will constitute the most efficacious means for their moral improvement. Persuaded that the services which Christian missions render in the order of intellectual and moral education of the natives, the congress expresses its desire that these missions should be encouraged; that the colonizing powers ought to lend a very particular solicitude to the matter of the enlightenment of the natives.

It will be readily seen that the proceedings of the international congress of sociology were given over to subjects of more interest to other than to French participants in the colonial congress. The papers of Mr. van Kol and Mr. Saussure were really of striking appositeness to us in view of the colonial problems which will soon be our portion.

Inasmuch as the papers read and the discussion ensuing were confined, for the most part, to French possessions and French experience, it is important to bear in mind when estimating the permanent value of the meeting that French colonial methods are based on conditions that do not exist in countries such as Great Britain and the United

States, where colonization and officialism do not flourish as in France and her dependencies. The following from the Times of London of January 17, 1900, is instructive:

STATEMENT OF THE CONDITIONS OF ADMISSION TO THE COLONIAL SCHOOL.

FRENCH SECTION.

The colonial school (French section), established at Paris, 2 Avenue de L'Observatoire, is intended to recruit the different colonial services and to give instruction in the colonial sciences. Students in the French section are divided into two categories: Those who aspire to be officials in the colonial administration, and those who intend to engage in commerce and agricultural pursuits in the colonies. The colonial school (French section) accepts only externs.

The student's diploma does not exempt, up to the present, its possessor from military service. The courses of the school begin during the first fifteen days of November.

ADMINISTRATIVE SECTIONS.

The colonial school consists of four administrative sections: Colonial commissariat, Indo-China careers, African careers, penal administration. The number of students to be admitted each year in each section is fixed during the month of February.

Decree of the 2d of April, 1896, modified by the decrees of the 6th of June, 1897, and of the 21st of July, 1898, relative to the recruiting of the colonial school.

The President of the French Republic, on the report of the minister of colonies, considering the article 56 of the law of the finances of the 17th of July, 1889, considering the decree of the 23d of November, 1892, and the 2d of February, 1894, regulating functions of the colonial school, decrees the following:

ARTICLE 1. The colonial school consists of four administrative sections, a commercial section, a preparatory division, and a native section.

ART. 2. The administrative sections are the following: Colonial commissariat, Indo-China careers, African careers, penitentiary administration.

ART. 3. The number of scholars to be admitted in each administrative section is fixed every year, the 1st of February, by the minister. The number shall be a third at least of the probable vacancies.

ART. 4. The conditions of admission to the courses are the following:

1. The student must be a Frenchman.

2. Be of the age of 18 years at least and of 22 years at most on the 1st of January of the year of the admission. That last limit is extended a number of years equal to those of the passed years in military service.

3. He must have a bachelor's diploma or a superior diploma or a certificate of studies granted by a school of high commercial studies, the Commercial Institute of Paris or of the superior commercial schools recognized by the State or of the agricultural institute, or of a certificate of admission in the hundred and fifty premiers at the naval school granted by the minister of marine.

He must be able to pass a presented physical examination.

The candidates must address an application before the 1st of April to the minister of colonies.

ART. 5. The programme of admission is the same for the four sections. It contains:

1. An examination in the subjects taught in the first year of studies in law, with the exclusion of Roman law. Young men justifying their admission to the first part of the baccalaureate in law are relieved from examinations in the following subjects: General history of French and foreign colonization to 1815; history of colonization of Europe to our days in America, with the exception of French actual possessions;

physics, geography—in particular, geography of the French colonies; topography. Practical colonial construction, conformable to a programme approved by the minister of the colonies. English, German, or Spanish language, the coefficient of the examination in the English language to be double that of other languages.

A special examiner for each of the examinations prescribed in the programme. The examiners are designated by the minister of the colonies. Professors in the preparatory division of the colonial school can not be examiners. Candidates who are definitely admitted must choose, following in their rank of admission, the section to which they wish to belong.

ART. 7. The general courses which must be followed by the scholars of all the sections comprise: The study of the colonies and lands of protectorate in Asia or Africa, and in the ocean, and the study of the French colonies in America; the general organization of the colonies; the administrative colonial law; colonial productions; modern languages; military and physical exercises.

The scholars must furnish every year a summary or a translation of a colonial work published in a foreign language and not yet translated into the French language.

At the end of the first school year the scholars must pass an examination in subjects studied in the law school in the second year of baccalaureate, Roman law excluded. In case they do not succeed they can not pass into the second year. Scholars who can furnish a certificate of bachelor's degree in law are free from the examination. At the end of the second school year an examination is held under the same conditions concerning the required matters for the license in law. Scholars who did not pass the examination in the month of November can not obtain the certificate of the colonial school. The duration of the course is fixed at two years.

Scholars who on account of sickness or by "vis major" are obliged to break off the courses, can be authorized by the council of administration to double their year.

Scholars who do not succeed at end of first year can be authorized to present themselves for examination without filing petition for admission on the conditions prescribed by article 4.

Scholars who do not succeed at end of second year can be authorized to take again that school year.

ART. 8. The special courses of each section are the following:

Colonial commissariat.—Course of theoretical and practical preparation. Only those scholars who passed the examinations of the first year in a law school will be admitted to follow the courses of the commissariat.

Indo-Chinese career.—Detailed geography of Indo-China; history and institutions of Indo-China; legislation and administration of Indo-China; Annamese language; reading and explaining ordinary Chinese and Annamese documents; languages used in Indo-China besides the Annamese language.

African careers.—Detailed geography of Africa; legislation and administration of our African possessions; special organization of Madagascar; Mussulman law, comparing same with the Hindoo law; Arabian language.

Penitentiary administration.—Penal legislation; penitentiary systems in use in France and in foreign countries.

Central administration of the colonies.—Candidates for the central administration of the colonies must follow, besides the general courses, one of the four above-mentioned series of courses.

ART. 9. The classification of the scholars in each section is made according to the number of points obtained since entering the school.

COMMERCIAL SECTION.

ART. 10. Young men desiring to follow the courses of the commercial section must be Frenchmen, aged 17 years at least and 30 years at most on the 1st of January of the year of admission. All must furnish the following: Birth certificate, extract of judicial record, and certificate of good character and morals.

The admission of candidates is decided by the minister of commerce on the proposal of the council of administration.

ART. 11. Scholars of the commercial section must follow all the general courses mentioned by article 6, except administrative law, the study of the colonial systems, and practical construction. Besides, they must follow one of the courses of the Annamese, Arabian, or Malgache languages. Physical and military exercises are not obligatory. The duration of the courses is fixed at one year.

ART. 12. Scholars who pass the final examination receive a special certificate.

GENERAL RULES OF THE FRENCH SECTION.

Besides scholars of the administrative and commercial sections and the preparatory division the school receives attendants at lectures, who are admitted upon authorization of the council of administration. These attendants at lectures must pay the fee for inscription. They can present themselves for examination, and, if they satisfy, receive certificates of study.

Dismissing a scholar, in case of bad conduct or in consequence of insufficient examination, is decided by ministerial resolution at the proposal of the council of administration. The discipline of the school is regulated by ministerial resolution, on the proposal of the council of administration.

Ministerial resolutions passed on the proposal of the council of administration stipulate the programme of the different courses, as also proofs required of the candidates at the course of the studies or at leaving the school. These resolutions stipulate also for each section the manner of classification.

NATIVE SECTION.

The native pupils sent by the colonies and countries under protectorate to complete their studies must comply with the regulations of the boarding school.

The board of pupils at the colonial school must be paid either by their families, colonies, or by the countries under protectorate to which they belong.

Board expenses of native scholars employed as repetitors at the courses of languages are defrayed by the school.

Native scholars must be at time of arrival in France over 14 years and under 20 years of age. They must sufficiently understand the French language.

The régime of the boarding school, the programme of the instruction, and the nature of the examination which scholars must pass to obtain a certificate of studies are fixed by ministerial resolutions on the proposal of the council of administration.

CONGRESS OF COMMERCIAL SCHOOLS.

The congress of commercial schools met at Paris on the 18th of July and adjourned on the 21st. The congress was largely attended, and its deliberations were of particular interest to Americans. The general line of discussion was as follows:

- First. (1) The placing of former pupils and the later bettering of their situations.
- (2) Encouraging and aid to pupils and former pupils.
- (3) Their influence on the development, commercial relations.

Second. The rôle of associations, conference of publications, etc., from the point of view of the study of general questions of commerce.

Third. Participations of such associations in discussions for the perfecting of commercial schools.

Fourth. Organizations and functions of such associations; statistics, results obtained.

Fifth. Relations of such associations among themselves.

Sixth. Participation of such associations in future congresses of commercial schools and in official congresses of technical education.

CONGRESS OF COMMERCIAL TRAVELERS.

The congress of commercial travelers proposed for consideration the following topics:

The moral and material condition of commercial travelers in France and in other parts of the world.

A more perfect equality before the law in the situation of the agent and the commercial traveler.

The creation of arbitrators to adjust such difficulties as might arise between this class of employees and their principals.

Trips into foreign countries, passports, and identification cards.

In case of bankruptcy an extension of the right of representation from three to six months.

The formation of national unions of commercial travelers and the establishment of an international organization.

A cheaper rate of fare for commercial travelers.

A reduction in freight charges on sample cases.

Indemnity for losses and the responsibility of carriers of all sorts.

Reduced rates on suburban trains and tramways similar to those paid by workmen without being restricted as to hour and train.

A reduction of postal rates and tariffs for telegram and telephonic messages.

Organization of mutual relief.

Association for commercial travelers and the creation of retiring funds and insurance for the benefit of widows and orphans.

The extension to commercial travelers of the principle of profit sharing.

The extension of commerce into the colonies.

REPORT ON THE COPYRIGHT CONGRESS.

By THORVALD SOLBERG.

As far back as the Paris Exposition of 1867 the idea was conceived of holding an international literary congress in connection with that exposition. But the suggestion came too late to be put into operation, and the project was postponed for another occasion. This opportunity came with the International Exposition of 1878. Upon the initiation of the long-established and well-known Société des Gens de Lettres de France a successful and largely attended international literary congress was opened, on the 11th of June of that exposition year, under the presidency of Victor Hugo, and closed on the 29th of June, at the end of the eleventh session, under the presidency of Tourgenieff, the Russian novelist.

This interesting congress did not limit its programme to the discussion of copyright, but many important phases of the question of literary and artistic property were discussed, and at the suggestion of M. Jules Lermina, in the session of June 29, 1878, it was voted to form the Association Littéraire et Artistique Internationale, as an organization whose special aim should be to secure better protection for literary and artistic property. Under the auspices of the association

thus created the annual international copyright congresses have since been held. In its organization it was thought necessary that the United States should take a part, and the historian Bancroft was made a member of the committee of honor, the executive committee including the names of Mr. Higginson and Mr. Edward King.

Annual reunions of l'Association Littéraire et Artistique Internationale were held, in 1879, at London; 1880, at Lisbon; 1881, at Vienna; 1882, at Rome; 1883, at Amsterdam; 1884, at Brussels; 1885, at Antwerp; 1886, at Geneva; 1887, at Madrid, and 1888, at Venice, besides an extraordinary meeting, in 1883, at Berne, Switzerland, where was initiated the movement resulting in the creation of the international copyright union, finally formulated in 1887, under what is known as the Berne Convention. In 1889, on the occasion of the Universal Exposition at Paris, a second international literary congress, beginning the 20th of June, was held in one of the halls of the palace of the Trocadéro.

During the ten years following, annual reunions of the International Literary and Artistic Association were held, in 1890, at London; in 1891, at Neuchâtel; in 1892, at Milan; in 1893, at Barcelona; in 1894, at Antwerp; in 1895, at Dresden; in 1896, at Berne; in 1897, at Monaco; in 1898, at Turin, and, in 1899, at Heidelberg. A special conference had also taken place at Berne in October, 1889.

The congress held in Paris in connection with the Universal Exposition of 1900 differed from the two previous Paris reunions in that there was no attempt to make it an international literary congress, but simply an international congress of literary and artistic property, that is to say, a copyright congress solely. For this reason the programme of the congress was lacking in the literary features of the two remarkable previous gatherings, and was confined exclusively to copyright. The programme of the congress was divided into three parts: (1) The study of a project for a law with a view to the unification of the legislation on literary and artistic property; (2) "Du domaine public payant," the possible rights inherent in literary and artistic works after the expiration of the statutory term of protection, together with some miscellaneous business; (3) a review of the laws in force or the legislation proposed in regard to copyright in the various countries represented. The congress was held under the joint auspices of the Association Littéraire et Artistique Internationale and the Syndicat des Sociétés Littéraires et Artistique pour la Protection de la Propriété Intellectuelle, with the concurrence of eighteen literary, dramatic, musical, artistic, and press associations; the invitations to be present being signed by MM. Eugène Pouillet and Jules Lermina, president and secretary of the first-named association, and MM. René Fouret and Édouard Sauvel, president and secretary of the second society; the United States delegate being present upon the invitation of the

Commissioner General of the United States to the Paris Exposition of 1900.

The congress was held from July 16 to 21, the meetings taking place in the "Hôtel du Livre" of the Cercle de la Librairie, No. 117 Boulevard Saint Germain, Paris. The attendance was not large, never exceeding 50 or 60 persons at any session, and generally a much smaller number of people were present.

The following official delegates were in attendance: Belgium, Paul Wauwermans; Ecuador, Palares Arteta; France, Alexandre Chaumet, from the ministry of justice, M. Lanel, from the ministry of state, and MM. Desjardins, Lionel Laroze, and Poupinel, from the ministry of public instruction; Mexico, Gustavo Baz, Sres. Contreras, and Ireneo Paz; Norway, Stand Lund; Russia, M. Pilenko; Spain, Sres. Calzado and De Huertas; the United States, Thorvald Solberg, register of copyrights.

Other prominent non-French delegates present were Henri Morel, the director of the Berne International Copyright Bureau, Prof. Ernst Röthlisberger, and Léon Poinsard, the first and second secretaries of that bureau; Dr. Albert Osterrieth, of Berlin; Moisé Amar and Ferruccio Foà, of Italy; Prof. Saburo Yamada, of Japan; His Excellency G. Djuvara, of Roumania, and Mr. Paul Oeker, an American resident in Paris and a member of the Association Littéraire et Artistique Internationale.

The organization of the congress was as follows: Honorary presidents: France, Victor Sardou, W. Bouguereau, Henri Belin, Charles Lyon-Caen, A. Hermant; Belgium, Paul Wauwermans; Brazil, Sr. de Fonseca; Germany, Albert Osterrieth; Mexico, Sr. Baz; Norway, Stand Lund; Russia, Professor Pilenko; Spain, Señor De Huertas; Switzerland, Henri Morel; the United States, Thorvald Solberg. Presidents: France, Eugène Pouillet, president of the Association Littéraire et Artistique Internationale; René Fouret, president of the Syndicat des Sociétés Littéraires et Artistiques pour la Protection de la Propriété Intellectuelle, Ladislas Mickiewicz; Belgium, Frans Gittens; Italy, Moisé Amar; Spain, Señor Calzado; the United States, Paul Oeker. Vice presidents: France, MM. de Larmandie, Jules Clére, Victor Suchon, Grenet-Dancourt, G. Roger, A. Darras, G. Pfeiffer, and A. Vaunois; Germany, M. Mintz; Italy, Giovanni Sicoré; Mexico, Señor Contreras; Monaco, M. Mareschal; Rumania, G. Djuvara; Spain, Sr. Castillo y Soriano. General secretaries, J. Lermina and E. Sauvel. Secretaries, J. Lobel, Chevalier Pesce, E. Röthlisberger, Ferruccio Foà, G. Harmand, A. Taillefer, Louis Rivière, and Saburo Yamada.

The only Americans who were present at any session of the congress were the two named above, the official delegate alone taking part in the programme.

The congress was opened at the formal inaugural session on the afternoon of the first day by M. Georges Leygues, who delivered the address of welcome, and after suitable responses by the presidents of the congress, Eugène Pouillet and René Fouret, the conference became a working body, a later session being devoted to two orations, one by M. Paul Wauwermans, of Belgium, in behalf of the official delegates to the congress, and the other by His Excellency M. Djuvara, the Rumanian minister, who addressed the assembly as the spokesman of the foreign nonofficial delegates.

The congress was, as already stated, purely a copyright congress. Papers and addresses on general literary subjects, such as had been submitted to previous exposition congresses, were entirely wanting, and all the proceedings were directed to topics intimately related to the legal protection of literary, musical, dramatic, or artistic property.

The fact that this congress was only one in so extensive a series (127 congresses) to be held between the dates of May 24 and October 13 partly accounted, doubtless, for its having less of an official and formal aspect than the previous exposition congresses or the various annual congresses held outside of France. It was strictly a working congress, with no unnecessary ceremonial, and with only a sufficient social and recreative programme to give one a pleasant sense of hospitality proffered and the needed rest and diversion between sessions. The attendance of persons interested was encouraged by arranging as a substitute for the usual requirement of the membership dues of the Association Littéraire et Artistique Internationale, and an additional attendance fee, one admission fee only of 25 francs, available to any person who should be introduced by one member of any one of the 20 literary, artistic, or publishing associations under whose united auspices the congress was held. Persons thus admitted not only were allowed to participate in the public sessions of the congress, but were invited to be present at the social functions.

The working programme of the congress was admirably arranged. The forenoons of the first two days were given up to four informal sessions, the congress sitting as a "committee of the whole" to discuss the items of the programme as they affected, respectively, literary, dramatic, artistic, or musical productions. In this way there was eliminated from the public sessions much time-consuming, elemental discussion, insuring rapid progress during the more formal sessions.

MISCELLANEOUS PROCEEDINGS.

On Thursday afternoon and Saturday morning various matters were discussed, such as the better protection of architectural works, photographs, and contributions to the daily press; the recognition of the principle that the artist has a right to demand the affixing of his name



C-15. VIEW OF SOUTH SIDE OF PUBLISHERS' BUILDING, ESPLANADE DES INVALIDES.

to his work; the nondesirability of multiplying special copyright treaties in view of the advantages to be secured by the extension of the influence of the Berne convention; a comparison of the provisions of the general copyright convention between the South American States, known as the convention of Montevideo, and the Berne copyright treaty, with a view to urging the adhesion of the South American Republics to the latter; and M. Édouard Mack's interesting paper on the rights which may be held to apply to literary and artistic works after the expiration of the statutory term of protection. The further possible revision of the text of the Berne convention in the direction of international protection for architectural works upon the same basis as that of other works of art; direct stipulation that the alienation of a work of art shall not involve the assignment of the right of reproduction; the provision that the usurpation of an artist's name, or any distinctive mark adopted by him, shall be subject to criminal-law penalties, and the incorporation into its text of all provisions in special treaties more favorable than the stipulations of the Berne convention—was debated with interest. The desirability of extending the provisions of this treaty to all civilized countries was emphasized, and a formal vote authorized the executive committee to urge the accession of the principal countries not yet within the international copyright union, notably Austria, Denmark, Hungary, the Netherlands, Rumania, Russia, Sweden, and the United States. In this connection the paramount importance of the adhesion of the United States to the Berne convention was dwelt upon and a resolution was voted expressing the wish that Congress would abrogate so much of the existing copyright legislation as prevents the entry of the United States into the International Copyright Union.

Expressions of sympathy were voted in recognition of the efforts being made to amend and enlarge copyright protection in various countries—Austria-Hungary, Germany, Italy, Rumania, and Switzerland.

STATUS OF COPYRIGHT IN VARIOUS COUNTRIES.

The morning session of Friday was devoted to reports and papers exhibiting the present status of copyright in various countries. A paper by Dr. Carl Junker, of Vienna, which was summarized by Professor Röthlisberger, of Berne, explained the movement in favor of Austria-Hungary's accession to the Berne Union; the official inquiry by the Austrian minister of justice as to the desirability of such entry into the International Copyright Union, and analyzed the copyright treaty between Austria and Germany of December 30, 1899. Dr. Albert Osterrieth, of Berlin, referred to the projected new German legislation upon literary property, but dwelt more especially upon the important project now under discussion in Germany for legislation to control the relations between authors and publishers. The movements in Italy,

more especially directed to an extension of the term of copyright protection, were outlined by Sig. Ferruccio Foà. The new copyright law of Japan, of March 3, 1899, was explained by Prof. Saburo Yamado, doctor of law in the University of Tokio. His Excellency T. G. Djurava, of Bukharest, indicated the several provisions of the Rumanian laws which affect literary property. Professor Pilenko, of St. Petersburg, explained the propositions of the proposed new legislation of Russia as regards protection in that country for translations of foreign books. The favorable provisions of the copyright law of Spain and the Spanish-French copyright treaty of 1880 were commented upon by Señor de Huertas, and M. Léon Poinsard, of the Berne Copyright Bureau, discussed the present agitation in Switzerland as to protection for musical works.

The register of copyrights gave an exposition of the United States copyright laws in force and indicated the few modern leading decisions interpreting existing laws. Much interest was expressed in the probability of a movement for a codification of the copyright laws of the United States and the possibility of certain changes suggested in correspondence between the Count de Kératry, of Paris, and Mr. Robert Underwood Johnson, secretary of the Authors' Copyright League of New York. The provision in the existing law as to typesetting in the United States was criticised; the register of copyrights pointing out, however, that this restrictive stipulation was equally applicable to the work of the native author. It was maintained, nevertheless, that while foreign authors were assimilated to native authors from the juridical point of view, practically, the obligatory requirement of typesetting within the United States was a much more burdensome stipulation in the case of foreign writers than in the case of native authors. The suggestion contained in the correspondence referred to, that the congress should favor a proposition to limit the stipulation of American manufacture to books in the English language, was not acquiesced in out of considerations of fair play to Great Britain, one of the countries of the international copyright union.

TYPE LAW OF COPYRIGHT.

The leading feature of the congress was the evolution of a final text for a "type" law, or model law of copyright. In previous annual conferences of the Association Littéraire et Artistique Internationale the subject had been discussed upon reports presented at Dresden, 1895; Berne, 1896; Monaco, 1897, and Turin, 1898. At this last congress the matter was referred to a committee of 24, under the chairmanship of M. Eugène Pouillet, a body fairly representative of the various interests involved, even architects and engineers being included. The material thus produced was admirably collated and presented to the congress by M. Georges Maillard, of Paris, in a text made up

from the various previous votes and resolutions after careful comparison. It was discussed with warm and sustained interest, amended in several particulars, and adopted by affirmative majority vote on each article.

As an appendix to this report will be found an English translation of the full text of this proposed law, and its principal provisions are here briefly summarized, the related provisions for the sake of brevity being brought together without regard to deviation from the order of paragraphs in the text.

SUMMARY OF TYPE LAW.

The author of a work of the intellect, without regard to his nationality or the place of first publication of his production, has the exclusive right to publish or reproduce it, by whatever process, in whatever form, or for whatever purpose. This right applies to all manifestations of thought, written or spoken, including contributions to the press, dramatic, musical, and choregraphic productions, and all works of graphic and plastic art, independent of their merit, use, or destination. The exercise of this right should not be subordinated to the accomplishment of any formalities whatever. Collaborators have equal rights in their common work, unless there should be stipulations to the contrary; and in the case of an author dying without heirs his part accrues to the benefit of the other joint authors or their heirs. The author's exclusive right covers all reproduction, in whole or in part, made without his consent, as well as translation, representation, and public performance, abridgment, adaptation, illustration, additions, alterations, dramatization of novels, or transformation of plays into novels. Reproduction by means of another art, rearrangement of music, or reproduction of music by musical instruments, and any such reproduction without his consent or the consent of his heirs are illegal.

Short citations from a published work, with proper credit given, and reproductions of parliamentary debates and addresses delivered at public meetings for the purpose of criticism, discussion, information, or education, are permissible, and laws and judicial decisions are held not to be subject to copyright.

The author's right of reproduction is held to be independent of the right of property in the material object, and the cession of the latter does not carry with it the transference of the right of reproduction. The cession of any rights appertaining to an author is to be restrictively interpreted. The term of copyright is the life of the author and eighty years after his death; in the case of joint authors, eighty years after the death of the last survivor; and for anonymous and posthumous works, eighty years from the first authorized publication. This acceptance of the principle of a statutory limitation of the term of

protection was not acquiesced in without demur on the part of those in favor of the perpetuity of copyright. The period fixed upon is that contained in the most liberal modern legislation embodying a limitation of the term of protection, namely, that of Spain.

In the case of illegal reproduction, the confiscation of plates and other articles pertaining to the infringement, and, upon unauthorized representation or public performance, seizure of the total receipts, shall be made for the benefit of the author or his heirs.

The proposed law differs most widely from legislation now in force in its careful provisions for enforcing the "moral rights" of an author. It is held that an author has the right to make known his authorship and to seek the protection of the courts against its usurpation; and that ceding his right of reproduction does not deprive him of the right to sue an infringer, or to scrutinize the reproduction of his book, and to oppose all modifications made without his consent or to oppose the public exhibition of his work if changed against his will; and, after the author's death, in default of a proxy previously appointed by himself, his heirs have the power to insist that these moral rights shall be respected. No modification shall be made in a work after the author's death without notification to the public. Any trespass on these rights of an author, or the usurpation of his name, or any fraudulent imitation of his signature or distinctive mark adopted by him, shall be just cause for an action for damages, and, if willfully made, for a penal suit.

The congress must be considered as having been eminently successful, by reason of the good fellowship shown, the seriousness of its attention to the programme of work, and the distinctly important and practical results of its deliberations. The evolution, after years of discussion and arduous, disinterested labor, of the text of a model copyright law which has been widely accepted with favorable comment, was of itself a distinct achievement.

RESOLUTIONS VOTED BY THE PARIS COPYRIGHT CONGRESS.

APPENDIX I.—*Project for a type law of copyright.*

ARTICLE I. The author of a work of the intelligence has the exclusive right to publish it, and to reproduce it by any process, in any form, or for any purpose whatever.

All manifestations of thought, written or spoken, dramatic, musical, and choregraphic productions, and all works of graphic and plastic art, independent of their merit, their use, or their purpose, are also likewise protected, as well as works which have appeared in newspapers and periodicals.

Official acts of public authorities and judicial decisions can not become the object of a private right.

ART. II. The exercise of the author's right is not subordinated to the accomplishment of any conditions or formalities.

ART. III. The exclusive right provided for by Article I continues during eighty years after the death of the author, for the benefit of his heirs or assigns.

ART. IV. The right in case of anonymous works has a duration of eighty years

from the date of the first authorized publication of the work. It is exercised by the publisher so long as the actual author is not known.

If the author makes himself known before the expiration of this period, the term of the protection continues during the life of the author and eighty years after his death.

Works which appear under the name of an incorporated body are considered as anonymous works.

ART. V. Collaborators have equal rights in a joint work, unless there are stipulations to the contrary.

The rights of the assigns of a deceased collaborator continue until the expiration of the term of eighty years after the death of the last surviving collaborator.

In the absence of assigns of a collaborator his share accrues to the other collaborators or their heirs.

ART. VI. Whoever edits a posthumous work of which he has the right to dispose enjoys the right of reproduction during eighty years, to date from such first publication.

Works are considered as posthumous which during the lifetime of the author have not received, with his consent, such normal publicity as comports with their character.

ART. VII. All reproduction, integral or partial, made without the consent of the author or his assigns is illegal.

The same is the case as regards translation, representation, and public performance.

Reproductions are equally illegitimate which contain abridgments, additions, and alterations; such as adaptations, transformations of dramatic works into novels, and of novels into plays; arrangements of music, reproductions by another art, and illustration of a work.

The same is true of the reproductions of musical compositions by mechanical instruments.

ART. VIII. An author once his book is published can not prohibit an analysis of or short citations from his work, made for the purpose of criticism, discussion, or education, when the author's name and the source of the citation is indicated.

Discourses pronounced in official assemblies or in public reunions may be reproduced for the purpose of instruction or discussion.

ART. IX. The right of reproduction is independent of the right of property in the material object (manuscript or original). The cession of the material object does not involve, by itself, the cession of the right of reproduction and vice versa.

The cession of the rights appertaining to the author (the right to publish, to represent, to perform, to translate, to illustrate, etc.,) must always be restrictively construed.

ART. X. The author of every work of the intelligence has the right to make known his authorship and to proceed in court against anyone who attributes to himself such authorship.

The author who has ceded the right of reproduction conserves the right to prosecute reprinters, to oversee the reproduction of his work, and to oppose all modifications made without his consent.

The author who has ceded the material object constituting his work has the right to oppose all public exhibition of his production if it has been modified without his consent.

ART. XI. After the death of the author, in default of a special representative designated by him, his heirs can compel respect of the rights provided for in Article X.

ART. XII. No modification must be made in a work, even by the heirs or assigns of the author, unless such changes are brought in an obvious way to the attention of the public.

ART. XIII. All interference with the rights of the author, as they are defined in

the present proposed type law, constitutes cause for an action for damages, and if the infringement had been knowingly committed it constitutes cause for a penal action.

ART. XIV. It is the same in the case of the usurpation of the name of the author or any fraudulent imitation of his signature or of any distinctive mark, monogram, or other sign adopted by him.

ART. XV. The author or his assigns can require the representatives of the judicial authority to replevin the objects inferred to have been used in an infringement, all plates, molds, or matrices and other utensils which have served or are intended to be used specially in the making of the said infringing objects.

In the case of a representation or performance the authors can proceed in the same manner to seize the total receipts.

The publisher or manager of a performance must produce the previous consent in writing of the author or his assignee.

The confiscation of the piratical articles, as well as of the plates, molds, or matrices, and the other utensils which have served or were destined to be used specially in the making of the said objects, shall be for the benefit of the author or his assigns.

In the case of illicit performance or representation the receipts seized shall be allowed the complainant.

ART. XVI. The law applies to all authors whatever their nationality, and in whatever place the work has appeared for the first time.

APPENDIX II.—*Miscellaneous resolutions.*

I. ARCHITECTURAL WORKS.

The congress, prompted by the votes expressed at the first international congress on artistic property, held in Paris in 1878; by the last three international congresses of architects, held in Paris in 1878 and 1889 and in Brussels in 1897, and by the several congresses of the Association Littéraire et Artistique Internationale held in Madrid, 1887; Neuchatel, 1891; Milan, 1892; Barcelona, 1893; Antwerp, 1894; Dresden, 1895; Berne, 1896; Monaco, 1897, and Turin in 1898, which tended to accord to works of architecture the same protection as to paintings, statuary, and other works of design;

Considering that architectural designs, comprising the plans, sections, elevations, details of the exterior and interior, façades, decorative details, etc., constitute the original of the work of an architect, and that the constructed edifice is only the reproduction;

Considering that the architectural work, like a painting or piece of statuary, has a right to the protection of the law, whoever may be the author or whatever may be its merit, when it presents characteristics of originality such as to give it an individuality:

Renews the vote that, in all legislation and in all international conventions, architects should enjoy for their works all the rights of artistic property acknowledged to painters, to sculptors, and to other artists:

Regrets that the act [diplomatic congress] of Paris of 1896 could not, by reason of the legislation of two of the countries, adherents to the convention of Berne (Germany and Great Britain) accord to architects a protection complete and uniform throughout the whole extent of the union:

And hopes that this protection may be completely realized in the next revision of the convention of Berne.

II. PHOTOGRAPHIC WORKS.

The congress expresses the view that everywhere the same protection should be accorded photographic productions as to works of the graphic and plastic arts:

III. CONTRIBUTIONS TO THE PRESS.

The congress votes that the reproduction, pure and simple, of a contribution to the press be prohibited when it assumes the character of dishonest competition:

IV. AFFIXING THE NAME OF THE ARTIST TO A WORK OF ART.

The congress expresses the wish to see adopted by legislation or jurisprudence the principle that every artist has the right to demand the affixing of his name to his work:

V. SPECIAL TREATIES.

1. The congress votes that the provisions inserted in international conventions should never be less favorable than the concurrent provisions of the national laws of the two contracting countries.

2. The congress recalls that the international literary treaties concluded between countries of the [international copyright] union before the convention of Berne was put into force, notably the Franco-Spanish treaty of 1880, remain in force for all such of their provisions as are more advantageous to authors than those of the convention of the union.

3. Nevertheless, the coexistence of the convention of Berne, and the special literary treaties between countries of the union complicating uselessly the system of protection in force in the union, it is desirable to abolish these special treaties, with only the reservation of the most favorable provisions referred to above.

4. The congress expresses the hope that at the next revision of the convention of Berne the countries signing such special treaties make every effort to have introduced into the convention of 1886 the more favorable provisions of these acts.

5. It is equally desirable that before negotiating a special literary treaty with a foreign country the Governments of the States of the union try to bring that country into the uni

VI. THE INTERNATIONAL COPYRIGHT UNION.

1. It is to be desired that it be stipulated in the convention of Berne:

(a) That the alienation of a work of art does not imply, by itself, the alienation of the right of reproduction, and reciprocally.

(b) That the usurpation of the name of an artist, as well as the fraudulent imitation of his signature, or of any other distinctive sign, monogram, or other mark, adopted by him, ought to be repressed by penal law.

2. The congress, after having heard the reports upon the state of the protection accorded literary and artistic works in the principal countries, expresses the view that the Berne union be extended to all countries not now adherents, and particularly to the following countries: Austria, Denmark, Hungary, the Netherlands, Rumania, Russia, the Spanish-American Republics, Sweden, and the United States.

The executive committee of the association is charged, in the form which may seem to it best, to take every necessary measure to assure the realization of this desire.

VII. RESOLUTIONS CONCERNING SPECIAL COUNTRIES.

1. *Austria-Hungary.*—The congress sends a vote of encouragement to the zealous defenders of the international protection of authors in Austria and in Hungary and expresses the wish that their efforts to secure the entry of their country into the Berne union may be crowned with speedy success.

2. *France and Great Britain.*—The congress expresses the desire that, following the example of the greater part of the special laws on artistic property, those of France and Great Britain be made to affirm the independence of the privilege of reproduction from the right of property in the original work by a specific text expressed thus:

The alienation of a work of art does not involve, in itself, the alienation of the right of reproduction, and vice versa.

3. *Germany*.—The congress expresses the desire that the two following principles be inserted in the German bill concerning contracts between publishers and authors:

(a) That the cession of the rights of the author shall be always construed restrictively.

(b) That, in the absence of stipulations to the contrary, the rights and obligations resulting from the contracting for an edition, can not be transferred by the publisher to a third party except with a transference of the stock in trade.

4. *Italy*.—The congress expresses the wish that the studies as to the modifications desired to be procured in the present Italian law, concerning the rights appertaining to authors of works of the intelligence shall be taken up again and promptly concluded, and that the study of "du domaine public payant" be continued by the royal commission.

5. *Rumania*.—The congress expresses the view that the royal Government of Rumania very rightly desires to obtain from the legislative body the repeal of article 9 of the law on the press, of April 1, 1862, concerning the deposit of literary and artistic works, and prays the foreign governments in general, and the Government of the French Republic in particular, to intercede in this direction with the Rumanian Government.

6. *Switzerland*.—The congress considers that the system of legal percentage provided for by article 7 of the Federal law of April 23, 1883, in regard to public performance and representation is contrary to the rights of dramatic authors and composers, and expresses the wish that this system be abandoned at the next revision of the Swiss law.

7. *United States*.—The congress expresses the desire that the American legislative authority abrogates, in the legislation concerning copyright, the restrictions which prevent the entry of this country into the union of Berne.

VIII. QUESTIONS RESERVED.

1. The congress, after having heard the paper by Mr. Mack upon "Du domaine public payant," considers that this document—whose importance and value are indisputable—touching upon a number of questions, demands an exhaustive study; thanks Mr. Mack for his labor, and decides that it shall be submitted to all the societies of *littérateurs* and artists, French and foreign, and be made the order of the day at a subsequent congress.

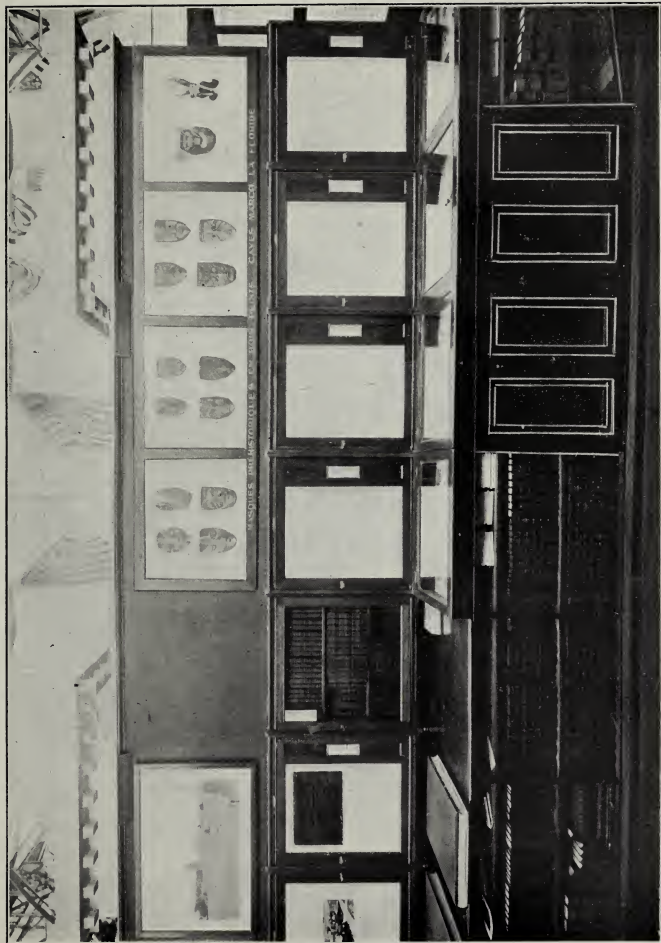
2. The congress expresses the desire that a committee of the Association Littéraire et Artistique Internationale be charged to make a comparative study of the treaties of Berne and Montevideo with the view of estimating their respective merits, and to investigate whether it is not possible to obtain the adhesion of the South American republics to the Berne Convention.

APPENDIX III.—*Bibliography of the copyright congress.*

1. République française. Ministère du commerce, de l'industrie, des postes et des télégraphes. Exposition universelle de 1900. Direction générale de l'exploitation. Congrès internationaux. Congrès international de la propriété littéraire et artistique. (Paris, 1900.) [Preliminary notice: Commission d'Organisation, etc.] 7 pp., 4°. [Paris, Imprimerie Nationale, 1900.]

2. ——— Congrès international de la propriété littéraire et artistique. (Paris, 1900.) Règlement. Programme. 5 pp., 4°. [Paris, Imprimerie Nationale, 1900.]

3. Congrès international de la propriété littéraire et artistique. (Paris, 16–21 juillet, 1900) *vère* partie. Projet de loi-type en vue de l'unification des législations sur la propriété littéraire et artistique. [Rapporteur général, Georges Maillard.] 20 pp. 8°. [Saint-Cloud, Imprimerie Belin frères, 1900.]



UNITED STATES EDUCATIONAL SECTION, GROUP I, CHAMP DE MARS, SHOWING UNIVERSITY OF PENNSYLVANIA EXHIBITS
OF ARCHEOLOGICAL EXPLORATIONS.

4. — 2ème partie. Du domaine public payant. Rapport par Édouard Mack. 20 pp., 8°. [Saint-Cloud, Imprimerie Belin frères, 1900.]

5. Congrès de la propriété littéraire et artistique. Paris, 16-21 juillet 1900. Sur le projet de réforme de la loi italienne. [Par Dr. Ferruccio Foà.] 4 pp., 8°. [Milan (?), Imprimerie Capriolo et Massimino, 1900.]

6. Association artistique et littéraire internationale. Bulletin No. 10, 3^e série. 22^e session. Congrès de Paris, de 16 au 21 juillet, 1900. Documents et rapports. 1 p. 1., 24 pp., 8°. [Paris, 1900.]

Contents.

I. Du droit moral de l'auteur sur ses créations, [par Jules Lermina, Édouard Mack, Georges Maillard et Albert Vaunois]. pp. 1-10.

II. De la protection des œuvres de l'art appliqué. Rapport de M. E. Soleau. pp. 11-18.

III. De la protection des œuvres scientifiques. Par G.-L. Pesce. pp. 19-24.

7. — Bulletin 11, 3^e série, juillet 1900. Sommaire & index des rapports et mémoires publiés par l'Association, décembre 1878-juillet 1900. 1 p. 1., 79 pp., 8°. [Paris, Soc. An. de l'imp. Kugelmann, 1900.]

Contents.

I. Préface (par Eugène Pouillet), pp. 1-5. II. Historique (1878-1900), par Jules Lermina, pp. 6-14. III. Sommaire des travaux et études publiés dans les Bulletins de l'Association littéraire et artistique internationale de décembre 1878 à juillet 1900, pp. 15-59. IV. Index des rapports et mémoires publiés dans le Bulletin de 1878 à 1900, pp. 61-67. V. Status de l'Association, pp. 68-71. Association littéraire et artistique internationale. Liste des membres au 1^{er} juillet 1900, pp. 73-79.

8. Le Droit d'Auteur, organe mensuel du Bureau international de l'Union pour la protection des œuvres littéraires et artistiques. 13^{me} année, No. 8, 15 août 1900. 4°. Berne.

Contains: Le Congrès international de la propriété littéraire et artistique (Paris, 16-21 juillet, 1900). pp. 97-107.

9. Börsenblatt für den deutschen Buchhandel. 4°, Leipsic, 1900.

Contains: Der Pariser internationale Kongress für litterarisches und künstlerisches Eigenthum. 16-21 Juli, 1900. No. 203, 1 September, 1900, pp. 6464-6466; No. 205, 4 September, 1900, pp. 6526-6529; No. 206, 5 September, 1900, pp. 6559-6563.

10. Gewerblicher Rechtsschutz und Urheberrecht. Zeitschrift des Deutschen Vereins zum Schutz des gewerblichen Eigenthum. 5. Jahrgang, Nr. 9, 4°. Berlin, September, 1900.

Contains: Internationaler Kongress für litterarisches und künstlerisches Eigenthum. Paris, den 16. bis 21. Juli, 1900. pp. 281-286.

11. The Nation, v. 71, no. 1838, September 20, 1900, 4°. New York.

Contains: The Paris Copyright Congress. Paris, July, 1900 [by Thorvald Solberg]. pp. 226-228.

CUSTOMS CONGRESS.

This congress had for its object to study the means of solving the various complicated questions which arise in the application of customs laws and regulations, and to formulate a certain number of resolutions to be submitted eventually to the sanction of a diplomatic conference. As it was strictly a congress concerning customs regulations, it did not occupy itself with questions of theory, nor admit discussions of economic order relating to protection and free trade. Its labors were devoted exclusively to the study of the manner of proceeding in the receipt of tariff charges and to the various formalities exacted in the different countries. In other words, the congress con-

cerned itself with the mechanism of customs administration and the improvements of which it is susceptible.

The committee on organization sought to obtain the active participation of the customs departments of various countries in the congress, so that personal experience might contribute toward the solution of such questions as might be presented.

The topics selected for discussion were:

I. Customs statistics:

(a) What are the means of securing the best conditions of exactness and uniformity in drawing up customs statistics?

(b) By what rules should new articles and products not foreseen in existing tariffs be introduced into customs nomenclature and statistics?

(c) What means should be employed for securing exactness in declarations as to kind and as to real destination of products offered for exportation?

II. Conditions under which certificates of origin may be delivered in order to have validity as proof.

III. Determination of a uniform basis for the calculation of ad valorem duties.

IV. Uniform regulation of legal tare and net weight.

V. Means of establishing a uniform regulation concerning the samples of commercial travelers.

The definition of "sample" and the means of verifying the quality of the objects carried as samples.

VI. Study of the various systems applied to returned goods and of regulations which France and other nations might reciprocally borrow from each other.

VII. Is it not desirable that customs litigation should, in all countries, be referred to committees of experts in which the interested parties are represented?

VIII. Is it desirable, in the interests of commerce, that the customs service should give aid to interested parties in checking off the work of the customs officers? By what measures can such aid be secured?

IX. Measures to be taken for facilitating and accelerating the taking of goods from customs and, especially, for procuring to the consignee the means of preventing declarations which are exact according to the tariff nomenclature.

X. Measures to be taken to render the inspection of travelers' baggage as little annoying as possible.

XI. Comparison of the system of bonded warehouses in the different countries, and study of regulations which might be borrowed reciprocally in the general interest of commerce.

XII. Examination of the international customs system for parcels post.

XIII. Organization of periodical international conferences. Establishment of an international repertory of the classification of merchandise.

Special meetings were held during the sessions of the congress which were reserved to the delegates of French and foreign state departments.

REPORT ON THE DEAF-MUTE CONGRESS.

By Prof. E. M. GALLAUDET,

President of the Columbian Institution for the Deaf and Dumb, Washington, D. C.

I have the honor to report that Professor Fay and I repaired to Paris early in August last to attend the international congress for the study of questions of education and assistance of deaf-mutes, invited

by the French Government to assemble in Paris on the 6th of that month. Assistant Professor Hall, of our college faculty, met us in Paris and attended with us all the meetings of the congress.

The composition of this body was interesting and unusual. It consisted of two sections, one composed of deaf-mutes and the other of hearing persons, mostly teachers. The former had upward of 200 members; the latter something more than 100.

The countries represented were France, Belgium, Italy, Switzerland, Austria, Germany, Russia, Denmark, Sweden, Roumania, Norway, Great Britain, the United States of America, and Mexico.

The preliminary arrangements for the congress, which required much labor and attention during many months, were in the hands of a committee at the head of which was Dr. Ladreit de Lacharrière, an eminent medical man of Paris, who had been for thirty years the attending physician of the national institution for deaf-mutes in that city. Dr. Lacharrière was made president of the congress by unanimous consent, as a courteous recognition of his arduous labors for its organization. He has never been a teacher of the deaf.

America was represented in the hearing section of the congress by President Gallaudet, the Rev. Dr. Thomas Gallaudet, Dr. Graham Bell, Professor Hall, of Gallaudet College, and the editor of the *Annals*. There were also two delegates from Mexico—Mr. Adolfo Huet and Mr. Daniel García. Mrs. B. St. John Ackers, of Huntley Manor, Gloucester, and Mr. John Barrett, of the Margate School, were the only representatives from England.

In the deaf section valuable papers were presented from several Americans, including Messrs. Veditz, Robinson, Fox, George, Hill, Davidson, Mann, Hodgson, Grady, Koehler, Hanson, Smith, and Cloud, and Mrs. Balis and Mrs. Searing, but only Messrs. Sheridan, Hodgmann, and Washburne, of Minnesota, and Mr. Alexander, of New York, were present from the United States. Prof. Edward Allen Fay, in his publication, *American Annals of the Deaf*, gives the following account of the proceedings of the congress:

The first subject that came before the hearing section of the congress was that of the organization of schools: "Should schools for the deaf be considered as establishments of benevolence or of instruction?" This seems a simple question to us in America, and one that is easily answered; but in Europe it involves matters of religion and politics that are seldom discussed without acrimony.

As soon as the question was presented Mr. Claveau moved that it be stricken from the programme. This led to a spirited discussion, which lasted an hour and a half, Mr. Claveau and Father Stockmans leading the forces which desired the suppression of the question, while Mr. Metzger, Mr. Nordin, Mr. Baguer, and the president urged the importance of considering it dispassionately and adopting a resolution upon it. Finally, after vain attempts to agree upon some kind of a compromise, it was voted by a large majority to strike the question from the programme.

The remainder of the afternoon was devoted to the question of advanced instruction for such of the deaf as might be capable of receiving it. A history of the secondary and higher education of the deaf in America and its valuable results was

presented, and a discussion followed upon the desirability of making similar provision for the deaf of other countries. In the negative it was urged that the deaf are inferior in intellectual capacity to hearing persons, and so incapable of receiving higher instruction; that, as most of them are found in the lower classes of society, a higher education would take them out of the sphere where they properly belong; and that it would unfit them for the practical duties of life. Happily these pessimistic views were not entertained by a majority of the members, and a resolution was adopted favoring the establishment of high classes for competent pupils in existing schools. This was not going as far as was desired by the advocates of higher education, but it was a decided advance on the action of the Milan congress, which took the ground that inasmuch as elementary instruction was not fully provided for in Europe nothing should be attempted in the way of higher education.

Mr. Heidsiek read a paper entitled "To what experiences has the pure oral method led?" He set forth the unsatisfactory results, from his point of view, of that method, viz, the development of an imperfect sign language, the unintelligible speech and speech reading, the defective general education, and the helpless condition of many of the graduates of oral schools. He summed up his conclusions in the following sentences:

"1. An experience of long years has proved that the pure oral method is applicable to deaf-mutes not properly so called, namely, to those who possess some remains of hearing and speech.

"2. For real deaf-mutes, on the contrary, especially those of feeble powers and moderate ability, the application of a combined system is desirable."

The papers of President Gallaudet and Mr. Heidsiek were the only elaborate ones on this subject, but they were followed by a long discussion. Mr. Forchhammer, Mr. Nordin, and Mr. Metzger expressed themselves as in general accord with the views of President Gallaudet and Mr. Heidsiek; Mr. Ferreri, Mr. Stockmans, Mr. Perini, Mr. Baguer, and others advocated the oral method for all pupils. No new and unfamiliar arguments were brought forward on either side, except that Mr. Forchhammer referred incidentally to the difference of different languages in respect to their adaptability to speech and speech reading. In the English language, for instance, he said that so many of the positions of the organs of speech are invisible, being inside the mouth, and far back, that English is the most difficult of European languages for speech reading. He thought the development of modern languages tended to make their words shorter and more concise, and therefore easier to speak and hear, but more difficult to read from the lips. For instance, the Anglo-Saxon verb *habaidêdeima* has been contracted into the English word *had*, which is shorter and easier to speak and hear, but presents far fewer visible signs to the eye of the deaf speech reader.

Other subjects discussed by the section on Tuesday and Wednesday, much more briefly than those already mentioned, were industrial training, kindergartens, compulsory education, auricular instruction, schoolbooks, assistance of pupils after leaving school, and collaboration between physicians and teachers. The subject of compulsory education brought up the same political and religious questions that were involved in the discussion of organization on Monday, and led to a spirited debate, in which Father Stockmans, of Belgium, and Dr. Bonnefoy, a young French doctor of laws who has interested himself deeply in questions relating to the welfare of the deaf, were the leading disputants. A compromise resolution was finally adopted without dissent to the effect that the government ought to furnish the necessary means for the primary and industrial instruction of all pupils.

Other resolutions adopted by the section expressed the opinion (1) that the semi-deaf should be separated from other pupils as far as possible, and should be educated by the auricular method; (2) that all pupils should receive industrial training, and that after leaving school they should be assisted in obtaining situations; (3) that

teachers and physicians in schools for the deaf should give one another mutual aid and support.

Mr. Joseph Medved, of Zagreb, Croatia, presented statistics relating to the deaf in Croatia and Slavonia. Dr. Bell presented statistics relating to the education of the deaf in the United States, and President Gallaudet presented statistics relating to the changes in method in the United States during the last ten years, and also statistics of schools in the United States, compiled by Mr. Olof Hanson, of Faribault, Minn.

On Thursday morning an elegant breakfast was given by Mr. Désiré Giraud, director of the National Institution at Paris, at which some of the leading members of the congress from America, Russia, Italy, Sweden and Denmark, and several of the instructors of the National Institution at Paris, were present. A confidential explanation was given by Mr. Giraud of the reasons which prevented the director and instructors of the National Institution from taking part in the congress, and various questions relating to the welfare of the deaf, including that of the time and place of holding the next international congress, were informally discussed. The American delegates proposed Washington, and Mr. Ostrogradsky, St. Petersburg, as the place for the congress. At a meeting held at the Paris Institution two days later it was agreed, on the suggestion of Dr. Bell, that the initiative steps toward the calling of the next congress, for which the year 1907 was regarded as a suitable date, should be taken, when the proper time comes, through the medium of an international publication which is to be established in the near future by the Volta Bureau.

The following paper, prepared originally in English, was read to the congress in French, and printed copies in English, German, and Italian were distributed among the members at the time of the reading:

WHAT IS SPEECH WORTH TO THE DEAF.

[By Edward M. Gallaudet.]

No more important question than this commands the attention of educators of the deaf to-day.

For the last twenty years enthusiastic and, no doubt, well-meaning men and women have been urging with ceaseless activity, both in Europe and America, the universal adoption of the oral method, the abolition of all other methods, and the rigid prohibition of the use, in and out of school, of that language which is as natural to the deaf as speech to the hearing.

The cry of these propagandists accomplished its first notable public result at Milan in 1880, when the partisan congress of that year and place shouted frantically for "la méthode orale pure."

It is the habit of these promoters of oral teaching to assert that the value of speech to the deaf is inestimable; that it is worth far more than any other attainment possible to them; that no price is too great to pay for it; that with it the deaf may be fully restored to society; that they can become like "other people;" that they can enter schools and colleges for the hearing and engage in recitations therein without special assistance.

Some have even gone so far as to claim, and this in a bill twice introduced into the Congress of the United States and favorably reported by a committee, that "it has been clearly proven that deaf children can learn articulate speech and language by the use of the eye for all practical purposes as well as children who hear can learn through the ear, provided they have this training in infancy and early childhood."

And those who make this claim seriously promise to impart to all deaf infants committed to their care such facility in speech and lip reading as will enable them to receive their education in schools for the hearing. And they declare the general

adoption of measures for teaching speech to deaf children in the days of their infancy will make it possible to discontinue all existing special schools for this class of persons.

It need hardly be said that no results have as yet been attained by the advocates of this extreme policy which entitle it to serious consideration.

Before undertaking to determine the value to the deaf of the speech which is really attainable, we must consider who are the parties to the controversy over methods, whose testimony is to be received, and whose opinions are to be weighed.

And we soon perceive that while the judgment of teachers always deserves serious consideration and may often be of great value, no mistake could be greater than to regard instructors as the only persons whose views are to receive our attention. Indeed, it will generally be admitted that teachers are often quite unable to judge as to the practical value of the speech of their pupils.

Many times is the speech of deaf children quite unintelligible to visitors, although their teachers understand it readily; and on such occasions these teachers express surprise that the visitors fail to understand what they easily comprehend.

The natural enthusiasm of teachers for a method, the desirability of which they are anxious to demonstrate, often warps their judgment to such an extent as to render it of little value.

May we, then, accept the opinions of the family and intimate friends of the deaf as to the value of speech to them? Not always; and for reasons similar to those which compel us sometimes to question the testimony of their teachers. Their family and intimate friends soon come to understand their speech, even though it be almost unintelligible to strangers, and so are often incompetent judges of its value in the world at large.

Of more importance than the testimony of teachers, family, and intimate friends is that of casual acquaintances and strangers, but of greatest value in the settlement of the question before us are the opinions and evidence of the deaf themselves.

From these four classes of witnesses I shall bring forward opinions and statements of fact which I hope may carry conviction to the minds of many, if not all, of my colleagues of this congress.

But before adducing this testimony I wish to take a little time to speak of those particulars in which and circumstances under which speech is beyond all question of great value to the deaf.

When a deaf person can, within a reasonable period of school life, acquire a power of speech and lip reading that will enable him or her to converse readily with strangers in social life, in business, and in travel, the acquisition is undoubtedly worth all it has cost.

Many of the advocates of the pure oral method do not hesitate to assure a confiding public that all deaf-mutes are capable of such success in speech. Were this true the controversy over methods would have long since come to an end; but unfortunately it is far from the truth, and so we find in all countries those who question more or less seriously the wisdom of banishing from schools for the deaf all methods except the oral.

In 1867 it was my privilege to make a careful examination of more than forty schools for the deaf in Europe. I was then a young man seeking instruction from my elders. The chief object of my investigation was to determine, if possible, the question I am discussing to-day. It was my good fortune to meet in 1867 nearly all the men prominent at that time in our profession, and, as was natural, I asked them many questions. It will be sufficient for the purpose of this paper to quote from one of these eminent men, "facile princeps" among the teachers of the deaf of his time, Moritz Hill, of Weissenfels. The day I spent with Hill in his school is a precious memory, and doubly so, as I had for an interpreter my lifelong friend, Dr. Felix Flugel, the eminent lexicographer, still living in Leipzig.

Anxious to know Mr. Hill's opinion as to the practical value of speech to the mass of his pupils, I asked some questions, which he answered as follows:

"Out of 100 pupils, 85 are capable, when leaving the school, of conversing on commonplace subjects with their teachers, family, and intimate friends; 62 can do so easily."

"Out of 100, 11 can converse readily with strangers on ordinary subjects. Many others learn to do this after quitting school."

In the careful analysis I propose to make of this testimony of Hill's I concede everything he claims, and shall not, therefore, have to take any account of the teacher's enthusiasm or natural bias for his own method.

First, I notice that 15 out of every 100 are not capable of conversing even on commonplace subjects with their teachers, families, and intimate friends. In speech they are failures. And yet no doubt they have spent many weary hours striving after the unattainable, and many other weary hours oblivious of the instruction their teachers were giving orally to their more-favored schoolmates.

In the United States there are 10,000 deaf children in school. According to Hill, 1,500 of these are incapable of success in speech. To them speech is of no value, and the time spent in trying to acquire it is worse than wasted, and should be given to something of worth which is within reach of their faculties. The same proportion will, of course, apply to the deaf in Europe.

Let us now consider those who can "converse on commonplace subjects with their teachers, family, and intimate friends," and what speech is worth to them.

Hill says that out of 100, 85 can do this, this number including the 11 who can do more. Making the necessary reduction, we have 74 whose intelligent use of speech, and this "on commonplace subjects," it must be observed, is limited to the narrow circle of "teachers, family, and intimate friends."

I ask you, my colleagues, to consider what this means. What real conversation, of a stimulating or elevating sort, can these deaf persons hope for in the home circle or among their most intimate friends if they are to be held down forever to the deadly level of the commonplace?

And yet this 74 per cent comprises those who stand for the average successes of the oral method.

How much better off are they than others of equal intelligence who have spent no time in learning to speak, but whose "family and intimate friends" have gladly, for their sake, learned the manual alphabet, and possibly some signs, and by these means are able to have actual conversations with their deaf friends on any subject, often rising far above the level of the commonplace?

Speaking from a personal acquaintance with some thousands of deaf persons, I am fully convinced that comparing the lot of the 74 per cent we are now considering, cut off as they naturally would be from the use of signs and the finger alphabet, with an equal number educated without speech, but well taught on the manual method, the lot of the latter would be far happier and more successful than that of the former.

Let us see now what conclusions must be drawn, if my judgment be just, as to the value of speech to the 10,000 deaf children now in school in my own country.

Fifteen per cent must be set down as getting nothing from speech. Adding to these the 74 per cent we have just been discussing, we have 8,900 whose lives would be happier and more successful were they well educated on the manual method than if they were educated on the pure oral method. And the same ratio would apply to the deaf of Europe. What, then, is speech worth to the large majority of the deaf?

In this connection I call to mind a visit I made some years since to the home of a deaf young man, then a student in our college at Washington all of whose early education had been conducted on the pure oral method. His father was a man of wealth, and he had had as his private tutor one of the most eminent oral teachers of our country. The young man to whom I refer depended on speech and lip read-

ing for his intercourse with his family, and I observed with much surprise that he took little part in the conversation at table or around the fireside. His friends made no attempt to help him understand the lively talk that was going on about him, and he sat much of the time silent and isolated. His neglected and forlorn condition excited my sympathy, and I could not help comparing it with that of many deaf-mutes of my acquaintance whose friends communicate freely with them by means of the manual alphabet, giving them rapidly and freely all the "give and take" of the home circle.

These, I am confident, had far greater social enjoyment in their families and among their friends than the orally taught youth to whom I have alluded. As I saw him, his speech was of little worth even among his family and immediate friends.

In support of the opinion that this is true of many orally taught deaf persons, I will now bring forward the testimony of a witness whose appearance in this discussion will surprise many, but whose commanding intellectual ability and whose keen powers of observation no one will question. I refer to the Right Hon. Joseph Chamberlain, the well-known British cabinet minister and member of Parliament.

Mr. Chamberlain spent the greater part of a day at the institution at Washington in 1888, when I had the pleasure of exhibiting to him our methods of instruction in much detail, from the most elementary work of our primary school on through the highest classes of the college.

Three months later Mr. Chamberlain was called before the royal commission on the deaf and the blind in England and asked to give an account of his visit to the college and to state his views in general in regard to the education of the deaf. His testimony fills four and a quarter closely printed folio pages of the report of the commission, and shows him to have been an observer of remarkable powers. He speaks of methods and their relation to each other with the clearness and precision of an expert.

In answer to the following question, "Was the impression you formed from visiting that institution that the combined system was a good one for the deaf and dumb, and that it could be carried on with success?" Mr. Chamberlain replied: "At the time my attention was not specially directed to the question, which I think has been occupying you very much, but I have thought of it a good deal since. I am quite satisfied with the results I saw, and, thinking it over since, I confess I can not bring myself to believe that the oral method could possibly be satisfactory by itself. I am strongly in favor of the combined system."

To the following question: "Was your impression from what you saw at the Washington college that if the pupils had been taught by the pure oral method they, in their intercourse with each other and with many of the outside world also, would still have recourse to signs?" Mr. Chamberlain replied: "I think it would be absolutely necessary for them to do so if they are to have any real enjoyment of life."

At the very end of his testimony two answers of Mr. Chamberlain's appear, which will be seen to be especially pertinent to this discussion, and which will, I think, commend themselves to very many teachers, and especially to the deaf themselves.

Question. "Suppose there are two deaf mutes, one who could speak orally only, and the other who carried on conversation by signs and the manual alphabet, which do you think would get on best in the world?"

Answer. "I would rather be the one who could speak by signs."

Question. "That is supposing you lived in a community of sign-speaking people?"

Answer. "No; what I should say is that one who spoke by signs would have a perfect communication with his intimate friends and relations and that that was worth more than an imperfect communication with the outer world."

Turning from the views of the eminent statesman I have just quoted, let us consider the opinions of the educated deaf themselves as expressed in conventions, in their publications, and in other ways.

I am aware that certain teachers of prominence have declared that the views of the deaf in this discussion are of no value. This ground was taken in Germany a few years since, when a petition numerously signed by educated deaf-mutes of that country was presented to the Emperor praying that essential modifications might be made in the methods employed in the German schools. It seems to me hardly necessary to controvert so groundless a claim as this, that the intelligent, educated deaf-mute is not capable of judging as to the value of the training he has received in school, for those who make it confess one of two things—either the training they have given their pupils is insufficient and crude or they themselves fail to understand the mind and disposition of those they have taught. As to the opinion of the deaf themselves (as expressed in their conventions), it will hardly be necessary for me to do more than allude to the fact, no doubt known to you all, that in these gatherings of the deaf, held as they have been in many of the prominent cities of Europe and America, a variety of methods in the education of their class is uniformly and almost unanimously demanded.

I have taken pains during the past few years to come into personal intercourse with many hundreds of the adult deaf in Great Britain and Ireland, in France, Switzerland, Italy, Austria, and Germany. I have found among them many of great intelligence and keen powers of discrimination, and their testimony has been most decided that to the average deaf-mute, those included in the 74 per cent we have been considering, the practical value of speech was small.

In an address given in London three years ago, I brought forward much individual testimony from educated deaf-mutes on this point, which I will not now repeat. I will only quote from a letter recently received from a deaf-mute of deserved prominence in Germany, one who has been designated by the German minister of education as a council member of this congress.

This gentleman, having been educated in an oral school, and able to speak and read from the lips with more than average facility, writes to me as follows in answer to certain questions:

"I think speech can never be of real worth to the deaf, because a great many of them can not pronounce perfectly well. The German teachers have long known this, and have made many proposals for another system of education, but without any effect until now. Some teachers have written to me that they could not but give the palm to the excellent results of those schools which have adopted the combined system over those German schools that make use of the oral method alone. The most of the German teachers are convinced that the pure oral method is an insufficient method of teaching. It is true that deaf-mutes, educated by the pure oral method, generally give up trying to speak with strangers after leaving school, and they look for friends among the deaf. Thus we see the impossibility of preventing the exclusiveness of deaf-mutes by teaching them orally. Most of the teachers of the deaf in Germany are not deaf, and have, therefore, little knowledge of the inner feeling and thinking of the deaf. This I regard as a calamity in our schools."

That the best educated deaf persons in Germany entertain, generally, the views I have just quoted from a representative of this class, I know through personal acquaintance with many.

At the International Congress of Instructors of the Deaf, held in 1893 at Chicago, an instructive paper was read by a highly educated deaf man on "The orally taught deaf after leaving school." In preparing his paper the writer had interrogated many orally taught deaf persons as to their experience in adult life. He gives in full a letter, the statements of one which may be taken as typical of the condition and disappointments of many. I give only portions of this letter.

"Had your questions been presented to me twenty years ago, when I first left school, I should probably have drawn a more rose-colored picture. Now I can only say that while I consider oral teaching valuable, and worthy of pursuit by all the

deaf, it does not and can not work miracles. No deaf person can be fully restored to society, except by the removal of deafness. It is an insurpassable obstacle to general conversation—a heavy incumbrance everywhere.

“With respect to the orally taught I have felt deeply of late that their position was an extremely anomalous one. They stand between two classes, having affinities with both, but really belonging to neither. As one lady—herself a fine oralist—said, ‘We do not fit in anywhere. We go among the hearing, converse with them to some extent, and are kindly received. We go among the deaf and dumb, talk with them as far as we can, and are welcomed with courtesy. But the fact is that each class has a language of its own, and in neither case is that language perfectly intelligible to us. We are simply mongrels.’

“Now these are strong statements, and would terribly shock my good teachers. But they are the result of hard and bitter experience, and I can not soften them without doing violence to my conscience. * * * A number of others feel just as I do.”

I could bring forward much additional testimony from intelligent orally taught deaf persons to prove that to very many the practical benefits of the speech laboriously acquired in school are far less than the assurances of their teachers led them to anticipate. I will not, however, take time for this, but will pass on to consider Hill's declaration that “out of 100 (orally taught deaf-mutes) 11 can converse readily with strangers on ordinary subjects. Many others learn to do this after quitting school.”

Here again I will give the largest reasonable consideration to Hill's claim, and admit that those who improve in their speech after leaving school so as to be able to converse readily with strangers will be as many as those who learn to do this while in school. This will give us an aggregate of 22 per cent of all the deaf who may expect to attain a full measure of success in learning to speak and in reading the lips of others. And in estimating the value of speech to these I will attach no great weight to the fact that Hill claims no more than that these can converse readily with strangers on ordinary subjects. Nor will I do more than suggest that in this 22 per cent will be found those we term semimute and semideaf, whose speech has therefore been acquired by means not greatly different from those by which normal children learn to speak.

For the sake of the argument I will fully concede that 22 per cent of the deaf may attain a perfection in speech fully compensating for the time and money expended, and that to these speech is worth all it has cost.

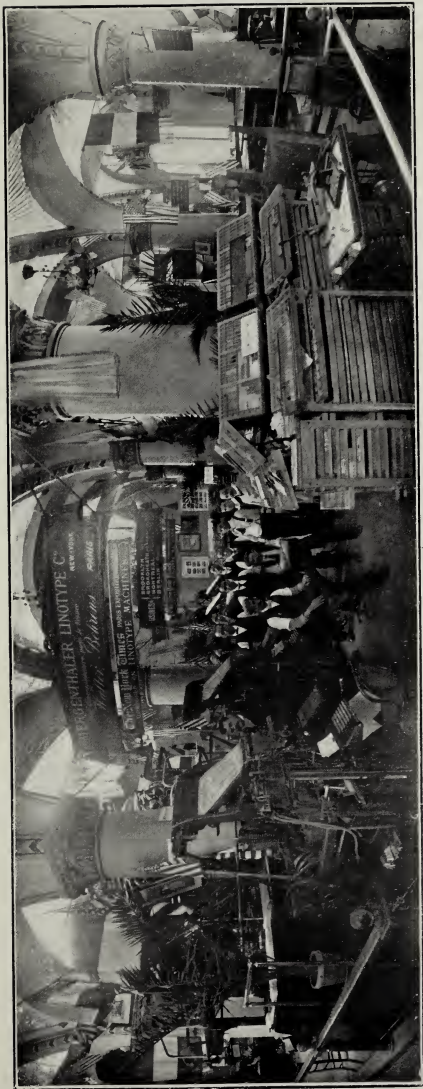
This conclusion will be accorded full consideration in the closing summation of the present discussion.

I will now ask attention to a very delicate matter in connection with the oral education of the deaf, which I approach with a good deal of hesitation; and I wish to say in advance that to the question I am about to raise I do not propose to give any answer or to express an opinion. I shall simply speak of some things to which my attention has been directed and leave others to determine whether they settle the question or not.

This is my query: Is there anything in the process of the oral education of the deaf which has a tendency to impair the moral sense of those who engage in it, either as teachers or pupils?

Many of my colleagues no doubt remember the serious criticism made by the deservedly distinguished Edward Walther, of Berlin, on certain teachers in his valuable work, *Handbuch der Taubstummenebildung*, published in 1895, in which he says of some who make extravagant claims as to the achievements of the oral method: “Since it is hardly possible that they deceive themselves, their object must be to deceive others.”

This serious indictment made a profound impression on my mind, and has led me



COMPOSING ROOM OF THE NEW YORK TIMES AND GENERAL VIEW OF WEST END OF PUBLISHERS' BUILDING, GROUP III ANNEX, ESPLANADE
DES INVALIDES.

to take note of many incidents which have come under my notice within the past five years, one or two of which I will now relate.

At a certain convention of instructors in my own country there were present a number of orally taught pupils who had been brought there to be exhibited. One of them was found one day making signs, and on being asked if signs were allowed in the school from which she came replied: "O, yes! but Mr. ——— told us we must not make any signs here and I forgot." The same girl was found a little later to have enough hearing to understand spoken words without seeing the mouth of the speaker, and when asked if she had always heard as much replied: "Yes; but Mr. ——— told me I must not let it be known here that I heard."

Are not these injunctions to conceal facts of a piece with what often occurs when the speech of deaf children is being exhibited and visitors are led to conclude that those before them were born deaf, when in fact many of them, and these generally the most fluent speakers, either possessed some hearing or had acquired speech before becoming deaf? Is it not common for oral teachers to assure their pupils that if they exert themselves to succeed with speech, they may avoid being recognized as deaf persons, may appear "just like other people;" in short, that they may deceive others?

The limits of this paper will not permit the mention of many similar incidents which have come under my notice, and I will dismiss the question I have raised with the remark that if in their sincere enthusiasm to impart the great boon of speech to as many deaf children as possible some oral teachers plant seeds of untruthfulness in the minds of their pupils, a very high, even a ruinous price, is being paid for an accomplishment which is found in many cases to be of comparatively little practical value.

I will now, Mr. President and honored colleagues, present the conclusions I have endeavored to reach.

During the thirty years which have passed since my memorable interview with Hill, of Weissenfels, I have met with great numbers of orally taught deaf-mutes and have visited many oral schools. Nothing has led me to doubt the correctness of Hill's quoted statements. What he said in 1867 is, in my opinion, true to-day. Making the best I can for the cause of oralism from his percentages, I conclude that for 22 per cent of the deaf speech is worth what it costs; that for 15 per cent it is of no use, and that for the remainder its value is by no means as great as the public has been led by the ardent supporters of the pure oral method to believe. More than this, when I consider the testimony of the deaf themselves and that of the many parents who have confessed to me their great disappointment at the results of the oral teaching of their children, I feel satisfied in concluding that for at least 50 per cent of the deaf, so far as attempts to teach speech are concerned, "the game is not worth the candle."

Under these conditions what should be the policy of true friends of the deaf as to methods? Can the course of those who insist on a single method be approved? Assuredly not.

Nothing is more clear to the intelligent and unprejudiced observer of deaf children than that their mental and physical capabilities are far from being the same. It is impossible to force all to the standards and requirements of a single method.

The method must be adapted to the child. And so it follows, logically and naturally, that for the best development of all the deaf, a combined system must be employed. I do not say "the" combined system, for many combinations are possible, suggested by differing conditions, some of which may be preferable to others, but all of which are more effective of results than any single method.

It is well known that in my country the great majority of the deaf are being educated on a combined system. It is, perhaps, not so well known that in the combined-system schools, more than half the pupils are taught to speak, and that in most of them all are given the opportunity to acquire speech.

I hope I shall not be regarded as boastful when I express the belief that the American schools for the deaf are to-day, as a whole, organized and conducted on a system calculated to secure "the greatest good to the greatest number," and that any defects that may be found are incidental, due to local causes, and easily removable.

In conclusion, I will venture to express the belief that the time is not distant when European teachers, generally, will conclude what many have already discovered, that the value of speech to many of the deaf has in the past been greatly overestimated, and that a broad system of education, using all means that have been found of service, is far more fruitful of results than any single method can possibly be.

THE DENTAL CONGRESS.

By TRUMAN W. BROPHY,

Dean of the Chicago College of Dental Surgery.

The international congress of dentistry met at Paris August 8 to 14, and was one of the most largely attended of the congresses by Americans, over 75 representatives from the United States attending the sessions. All of these were medical men or practicing dentists.

Among the papers read by the American delegation was one on pulp digestion by A. W. Harlan, of Chicago:

PULP DIGESTION.

This is a new process by the use of papain, which is obtained from *Carica papaya*.

First. The pulp must be destroyed by a corrosive.

Second. Papain will act in an acid or alkaline medium.

Third. The process is sure and simple.

Fourth. Experiments shown.

Fifth. The method is nontoxic and can be used by anyone.

Sixth. It is applicable to dead pulps in deciduous teeth and permanent teeth.

Seventh. Papain and glycerol are made into a paste and a small quantity of one to three HCl added. This paste is then applied to the dead pulp and sealed in the cavity for one or two weeks, when the pulp will be found to be liquefied or digested. The digested mass is easily removed from the roots and they may be filled immediately.

Dr. J. W. Wassall, of Chicago, read a paper on the "Hygiene of the mouth."

Dr. Joseph Head, of Philadelphia, spoke on "Porcelain inlay."

Dr. A. W. Harlan demonstrated the "Uses of papain in the digestion of the dental pulp."

Dr. Gordon White demonstrated his "Self-retaining spring mattresses."

A paper was read by Truman W. Brophy, Chicago, Ill., on the surgical treatment of palatal defects. The writer devised an operation to be made on young children under five months of age, which consists in the carrying of the hemispheres of the palate together and approximating them in the median line securing immediate union, and thus making phonation distinct when the child is old enough to begin to speak.

The reasons given in favor of early operations for closure of cleft palate are as follows:

1. The surgical shock is less, because the nervous system of a young child is not well developed, and it is not therefore capable of receiving the same impressions that it would later in life, for young children usually react better. Moreover, all mental apprehension is eliminated, and we all know that alarm and dread are among the most powerful factors in producing shock.

2. Before the bones are fully calcified they may be bent or moved without fracture. Bone at birth is about one-half organic matter, hence the injury is really less in closing a cleft than it would be if calcification were more complete.

3. If the muscles are very early brought into action they develop instead of wasting, and hence a good velum is secured, with plenty of tissue; whereas, if the operation is undertaken later in life, after the parts are shrunk through nonuse, they can rarely be made to subserve the same purpose that organs that develop through natural employment can be made to do. It is well known that muscular tissue is more perfectly developed through action. In instances of cleft palate none of the muscles of the velum can be normally employed when the parts are not united, and hence they remain in an immature condition through life, even when an artificial substitute is inserted. By operating at a very early age they are at once brought into use and their development is proportioned to that of the other tissues.

4. When the palatal process of the maxillæ are united it will be observed that the development of the bones of the alveolar process of the upper jaw assume a form nearly or quite normal, and when the teeth are erupted they will properly occlude with the lower ones, or nearly so.

The following resolutions were submitted for adoption at the general closing assembly, offered by the special commission:

1. That so far as possible for the study of the different microbes a uniform method of culture should be established.

2. That the manufacturers of dental supplies pay more attention to the wishes expressed by dental societies, so far as color of rubber, the natural form of the teeth, the composition of alloys, and the manufacture of other dental products are concerned.

3. That the term "cohesive gold" should be substituted for "adhesive gold," as being a more precise expression.

4. That no dental diploma should be issued to any person under the age of 21 years.

5. That the best way to combat charlatanism consists in the education of the public by familiarizing it with dentistry and dental hygiene through the medium of societies, journals, and schools.

6. That personal character and honor should be insured by a written pledge, taken on entering professional institutions and societies, agreeing to practice in an honorable way—that is to say, to abstain from any kind of advertising and other acts contrary to professional dignity.

7. That the required preliminary education of a dental student before his admission to the college should comprise a literary instruction, with the knowledge of two modern languages (English, German, or French); a scientific instruction, and a manual training.

8. That the period of study in dental colleges should be not less than four years.

9. That the period of study in dental colleges for doctors of medicine should be at least two years.

10. That the proposition of an international federation of dental colleges, presented by Mr. J. H. Spaulding, should be referred to the international commission on instruction.

11. That an international dental federation should be founded.

12. That the national committees appointed in view of the present congress should continue and form the international dental federation.

13. That at the last meeting of the congress a commission of nine members should be appointed to examine the conditions of a constitution for the international dental federation, to lay the same before the national committees, and to prepare for the next international dental congress.

14. That the international dental federation should be composed of all the national committees, represented by an executive committee. The first executive committee, numbering nine members, shall be appointed by the members of the third international congress, at the last general meeting, on Tuesday, August 14, and its powers will expire on the opening of the fourth international congress, which latter it is charged to organize. This first meeting shall be held Wednesday, August 15, at 9.30 a. m., at the Dental School of Paris. (The meeting was held.)

15. The fourth international congress shall be held, at the earliest, within five years, in the country that seems to be best indicated to the executive committee, after a selection from the invitations tendered by the different national committees and after an understanding with them. In any case, a decision must be taken not later than 1903.

16. That an international commission on instruction (education) shall be appointed, charged to compile a list of theoretical and practical knowledge a dentist must possess. This commission shall be appointed by the executive committee.

17. That in all public schools an inspection of teeth shall take place at least every six months, and that the treatment of diseased teeth shall be assured regularly, both services being in charge of a dentist.

18. That the principal rules of dental hygiene shall be indicated in establishments of primary education by charts and tables.

19. That dental hygiene shall form a part in the instruction of general hygiene.

20. That wherever the Government provides for medical treatment it should equally provide for dental treatment by dentists.

21. That public dental services should only be intrusted to practitioners holding a Government dental diploma.

22. That the health service of the armies and navies should include dentists, as it already comprises physicians, pharmacists, etc.

THE DISINTEGRATION OF CEMENT FILLINGS.

[A synopsis of the paper by J. E. Hinkins, D. D. S., and, S. F. Acree, senior fellow in chemistry, University of Chicago, read before the international dental congress.]

From years of observation we have discovered two distinct actions on cements: One, the mechanical attrition; the other, the dissolving away under the free margin of the gums. The first amounts to very little; the second is the principal cause of the failure of cement fillings. As the principal loss is beneath the free margin of the gum, it seems possible that the dissolving of cements is due to acids or alkalies formed by bacterial fermentation of inclosed food stuffs.

The problem then presented to us is as follows: First, to determine the composition of cements; second, to determine, if possible, the amount of acid or alkali formed by the common bacteria of the mouth when they act upon food stuffs; third, to see if these acids or alkalies will dissolve the cements. The first part of the problem is one that has been worked at for thirty years, but no definite results from a chemical standpoint have been obtained.

The first part of the paper was a careful review of all the chemical and dental literature on cement fillings which has appeared during the last thirty years. Up to this time the composition of the so-called oxyphosphate of zinc cements has not been accurately determined. They were supposed by most dental chemists to be an oxyphosphate of zinc.

This term, oxyphosphate of zinc, is a misnomer. Upon looking through the chemical literature we find no such substance described. Further, upon mixing zinc oxide and glacial phosphoric acid a chemical action takes place with the formation of zinc phosphate, and any excess of either zinc oxide or phosphoric acid and the excess of water remain inclosed in the mass.

We have made up cements with an excess of zinc oxide, and also some with an excess of phosphoric acid. These were prepared in about the same way as we employ in making fillings in the teeth and have about the same properties. When one of these cements is dissolved in hydrochloric acid, and this solution is made slightly alkaline with ammonia, zinc phosphate is precipitated as a finely crystalline powder, having all the properties of normal zinc phosphate, $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$, described in Dammer, the reference book of inorganic chemistry. The above is an easy method for separating the zinc phosphate from the rest of the cement, as zinc oxide, or, of course, phosphoric acid, would not be precipitated under these conditions. The zinc phosphate thus precipitated had not only the physical properties of that given in Dammer, but also chemical analysis showed it to be identically the same substance.

The following are typical samples:

(1) $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$ from sample of cement with an excess of phosphoric acid. Heating fifteen hours at 170°C ., 1.3724 grams gave off 0.2125 gram H_2O .

(2) $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$ from sample of cement with excess of zinc oxide. Heating twenty hours at 180°C ., 1.1005 grams gave off 0.1719 gram H_2O .

(1) 0.1825 gr. gave 0.0902 gr. $\text{Mg}_2\text{P}_2\text{O}_7$.

(2) 0.1376 gr. gave 0.0672 gr $\text{Mg}_2\text{P}_2\text{O}_7$.

Analysis of $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$.

	Theoretical. (Per cent.)	Found.	
		I.	II.
H_2O	15.73	15.48	15.67
PO_4	41.46	42.18	41.67

The excess of zinc oxide of phosphoric acid in the filtrate from the zinc phosphate was precipitated as zinc sulphide, or magnesium ammonium phosphate, and weighed. Various samples were analyzed according to this method. 0.7900 gr. of one cement, dried, gave 0.7545 gr. $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$ and 0.0430 gr. of H_3PO_4 , or a total of 0.7975 gr., which shows the method to be reliable. 1.1730 gr. of another cement, not dried, gave 0.8853 gr. $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$ and 0.2115 gr. ZnO ; the other 0.0762 gr. was doubtless H_2O . From this it is evident that cements are varying mixtures of zinc phosphate and other substances, such as zinc oxide, phosphoric acid and water, and a quantity of other impurities which have been shown by Dr. Hinkins to be present.

Having thus established the composition of the so-called zinc oxide-phosphoric acid cements, we next turn to the second part of the problem, the determination of the amount and kinds of acids or alkalies produced by the common bacteria of the

mouth, when living upon such food stuffs as Witte's peptone, asparagin, etc., together with glucose or lactose and a small admixture of sodium sulphate, etc. Such media are excellent for the growth of *bacillus acidi lactici*, *sarcina lutea*, *sarcina aurantica*, *staphylococcus pyogenes aureus*, *bacillus coli communis*, and many organisms found around the decaying margins of cement fillings. Liter flasks of the sterilized media were inoculated with the various cultures and kept at a constant temperature of 37° C. From day to day 10 cubic centimeters were removed by means of a sterilized pipette and the amount of acid formed was determined by titrating with N/10 NaOH, using phenyl phthalein as indicator. Varying with the bacterium, the strength of the acid solution was found to be N/25 to N/8. The kinds of acids were determined and found to be carbonic, formic, acetic, lactic, butyric, valerianic, hydrosulphuric, and propionic acids.

In the decay of cement fillings the bacteria of the mouth collect under the cervical margin and decompose food stuff which may accumulate here, forming the above-named acids, very probably in about the strength ascertained above. These acids then dissolve away the cement filling.

That these acids of N/12 strength, or an average found in the above solutions, can dissolve cement fillings readily is shown by the following:

We made a solution of equal parts of lactic, butyric, acetic, and valerianic acids of N/12 strength and treated samples of various standard cements with this.

(1) 1.6695 gr. of a Justi cement, when treated forty-eight hours with this mixture, lost 0.2066, gr. or 12 per cent. Of this 0.2066 gr. there were 0.1370 gr. of ZnO and 0.0540 gr. $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$.

(2) 1.2540 gr. of a sample of Ames' cement lost 0.1985 gr. in forty-eight hours when treated with the N/12 acid mixture. Of this, 0.1485 gr. was ZnO and 0.0490 gr. was $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$.

(3) A sample of Weston's cement lost 16 per cent in seventeen hours, or 1.6378 gr. lost 0.1005 gr.

It must not be understood that these tests are to be taken as indicative of the standard of excellence of these cements, for the results of this paper show clearly that the excellence of any cement depends upon the varying amounts of zinc oxide and phosphoric acid used. In other words, the more zinc phosphate and the less free zinc oxide or phosphoric acid there is in a cement the less likely it is to be dissolved by these organic acids.

In conclusion, we are perfectly justified in assuming that cement failure in the teeth can be attributed to the solvent power of the organic acids formed at the seat of decay by the destruction of food stuffs by the common bacteria of the mouth.

REPORT ON THE CONGRESS OF DERMATOLOGY AND OF SYPHILOGRAPHY.

By ALFRED J. OSTHEIMER, Jr., M. D., *United States delegate*.

The fourth international congress of dermatology and syphilography was held at the St. Louis hospital from August 2 to August 9, 1900.

Skin diseases and syphilis were the subjects discussed, in the light of recent studies and researches. The use of electricity and concentrated chemical rays in the treatment of some skin diseases was brought into prominence by the good results obtained. The possible parasitic origin of eczema was discussed, though no definite conclusion was reached.

Dr. Taylor, of New York, read a paper on "Generalized infections

of gonorrhea;" Dr. Bulkley, of New York, reported on "Syphilis and associated infections;" Dr. Holder, of New York, read a paper on "Lupus erythematosus and other chronic diseases of the skin;" Dr. Hyde, of Chicago, reported on "A series of cases of blastomycetic dermatitis," and Dr. Gilchrist, of Baltimore, gave a lantern-slide exhibit of some cases of blastomycetic dermatitis, with a comparison of cases of protozoic dermatitis.

The next congress is to be held in Berlin in 1903, and it is probable that the one following, in 1906, will meet in New York.

REPORT OF THE CONGRESS ON INSTRUCTION IN DRAWING.

By EMILY SARTAIN,

Principal of the Philadelphia School of Design for Women, official delegate from the United States.

The first international congress on instruction in drawing owes its initiative to the "Association Amicale des Professeurs de Dessin," of Paris, and the meetings were held at the stately Library Club, on the Boulevard St. Germain, which is the headquarters of the association. Fifteen countries were officially represented—Austria, Belgium, Bulgaria, Cuba, Ecuador, France, Great Britain, Hungary, Japan, Luxemburg, Mexico, Roumania, Russia, United States, and Switzerland—the official delegates from the United States being Miss Emily Sartain, principal of the Philadelphia School of Design for Women, and Miss Mary C. Wheeler, of Providence, R. I. The supervisor of drawing of Denver, Colo., Mr. Charles M. Carter, attended all the sessions of the congress as a member and was elected one of the foreign honorary presidents.

The congress was formally opened on the 29th of August, M. Georges Leygues, minister of public instruction and of the fine arts, presiding. M. Paul Colin, inspector of drawing and of museums and professor in the polytechnic school in Paris, was elected president by acclamation, and, after a welcoming address by the president and the reading of the secretary's report, M. Leygues spoke eloquently in advocacy of the introduction of general instruction in drawing into all schools, insisting that it is as essential to men of science, to historians, to geographers, etc., as to architects, painters, and sculptors, and no less so to physicians, anthropologists, archaeologists, etc. "In fact, whoever reflects has need of instruction in drawing," he said. "It is an indispensable auxiliary without which science is arrested, the industries cease to progress, and there is no genuine art. * * * Gounod one evening gave me an admirable definition. He said, 'Art is emotion transmuted into knowledge; it is heart become brain.'"

During the mornings of the three ensuing days the three sections into which the congress had been divided—(1) general instruction, (2)

technical instruction, (3) special instruction—convened separately to discuss the papers presented and the resolutions proposed. Printed copies of these had been distributed in advance to every member of the congress, in order to afford time for mature reflection upon the questions and thus insure more valuable opinions. In the afternoons in plenary sessions the reunited congress voted upon the resolutions submitted to them as the crystallized result of the morning's work. It was all admirably organized in every detail; action was prompt and businesslike; discussion was to the point, and no time was lost on side issues.

Printed programmes of the work planned for each day were also distributed, and included visits to the art-educational exhibits of France in the International Exposition, made under the guidance of the supervisors of drawing of the city of Paris and of the Government of France. These gentlemen explained by the exhibits the courses of study and methods of instruction, and illustrated by the drawings some of the points that had arisen in the first section in the heated discussion upon the second and third questions.

These inspections were extended later to the educational sections of all the different nationalities represented in the congress who made exhibits of school drawing, and they continued for a fortnight after the sessions of the congress ended. Each country's delegates in turn were hosts to their colleagues and explained their national school system of drawing. Miss Wheeler and Miss Sartain were always in attendance during the numerous visits paid to the United States section, not only by the members of the Congress, but later by the permanent committee elected at the last session to prepare for the next congress, which, it is proposed, shall convene in Berne a few years hence.

The permanent committee was authorized to select special exhibits to exemplify each national system of drawing and to solicit their donation to a museum of contemporary methods of instruction in drawing which is to be founded in Paris under the auspices of the ministry of the fine arts. They made liberal choice from the public-school exhibit of the United States, and included also the folios sent by the Art Students' League of New York and the Art Institute of Chicago, these two being the only art schools represented in our section. The members of the congress and of the permanent committee were particularly interested by the extensive use of drawing in all branches of study in our public schools to assist words in the expression of an idea, whether in depicting an object in nature, biological, geographical, etc., or representing a mental image as embodied in a composition and its illustrations. This recognition of drawing as a language is a vital point in the newer method of instruction in drawing now introduced into the municipal schools of Paris.



SECONDARY EDUCATION, DRAWING FROM COLLÈGE ROLLIN.

The French delegates were also much impressed by the method of installation of our educational exhibits, and regretted that they had not thought of the same plan. Our uniform wall cases, inclosing hinged leaves, seemed to them an ideal way of presenting a large exhibit of drawings within small compass. However the devices essential in our restricted space seemed not to be required for the presentment of the work of the French schools, so extensive in surface were the walls and screens devoted to its display.

We heard much regret expressed that the many pamphlets provided for free distribution by the United States Government and by individual institutions—interesting and authoritative treatises by experts upon all phases of our educational system—had not been printed in French as well as in English. Other nations, as a rule, furnished French translations of their official and commercial literature, and thus reached a larger audience and insured more intelligent interest and comprehension among foreigners.

In the regular sessions of the congress only one paper was presented by an American. Miss Wheeler, official delegate to the congress, wrote a scholarly and able argument in favor of making drawing obligatory in all schools, the first question discussed in the first section. She welcomed this opportunity to gain wider hearing to her conviction that it should rank with other studies in all colleges and count as an elective in the entrance examinations to college. Miss Sartain also had been requested to report upon the schools of design in the United States, but unfortunately the invitation arrived too late, and by mishap was not brought to her cognizance until her return to the United States after the congress.

In the first section, whose province was general instruction in drawing, interesting papers upon various phases of the subject were read and discussed, and the resolutions adopted were afterwards approved in plenary session. Three earnest educators advocated the "Necessity of making instruction in drawing obligatory," which was the proposition of the first question considered, and with little opposition it was resolved (1) that drawing should be obligatory in all schools, in all examinations, and in all competitive examinations in general scholarship without exception, and also (2) that in all examinations in general scholarship absolute incapacity in drawing should warrant excuse.

The second and third questions aroused much interest and animated discussion—"Teaching of imitative drawing;" "Teaching of geometric drawing."

The method, programme, and pedagogy of the French minister of public instruction were presented in a masterly way by M. J. J. Pillet and others, and the *Méthode Guillaume*, which is used in the primary schools¹ dependent upon the Central Government, was approved by

¹The French classification of schools is used throughout this report, and the term "primary" includes all grades up to the equivalent of the American high school.

acclamation. The newer system introduced into the primary schools of the city of Paris, which are controlled by the municipal government, was presented in an exhaustive paper by Mlle. de Labouret. This method regards drawing as a language, in contradistinction to the older method, which is based upon the geometric idea. The change is due to the initiative of M. Louis Guebin, inspector in chief of instruction in drawing for the city of Paris, who later invited the foreign delegates to a municipal school, where he explained to them succinctly, yet in detail, his progressive course of drawing (which includes elementary design), illustrating it fully by pupils' work. Attention was called in passing to the change in the color of the blackboards, which were painted a dark warm gray, upon which charcoal and white and colored chalks relieved with equal distinctness. Now that color is so extensively used in school work, it would be well for us to follow the example of Paris, and substitute a harmonious background in the place of the slate now in vogue. It would train the children's eyes to appreciation of just values and relations of color.

Drawing in the kindergarten in France and in other countries was then considered as the fourth question, and it was voted (1) that the intuitive method inaugurated by Froebel and Madam Pape-Carpentier should be maintained in the kindergarten; (2) that the exercises in application should lead up to the study of drawing as taught in the elementary school; (3) that in the primary school these exercises should be continued and synthesized to serve as auxiliaries to the teaching of free-hand drawing, giving to it an experimental and geometric character; (4) that it would be well to suppress completely in primary schools the use of cross-section paper and of copy-book methods which result only in servile copying.

Upon the fifth question, instruction in drawing in the primary school, three interesting papers were read detailing exhaustively the organization of the normal schools of France and the special organization of the city of Paris. Stress was laid upon the necessity of insisting upon the pedagogical preparation of the teachers in all that relates to primary instruction, and of exacting constant parallelism between the exercises in drawing by sight and in geometric drawing. These motions were approved, and desire was also expressed that more efficacy should be given to primary-school drawing, by exacting greater severity on the part of the jury in judging the test drawings for the certificate of primary studies or analagous examinations. It was also wished that lectures should be instituted to guide the corps of teachers, and also that there might be assured, from the pedagogical point of view, organized supervision of the teachers of drawing in primary schools.

The succeeding papers made plea for popular instruction in decorative composition and in modeling, and resolutions were passed

advocating the introduction of these branches into elementary work. Desire was expressed also that a normal course to train professors of drawing should be created, and also that obligatory courses in the history of art should be established in the university and its affiliated establishments, in order to develop the taste and the sense of beauty among advanced students and at the same time to vivify the study of history. The word was written in the singular, because in France there is only one university, the dependent schools forming part of its system being scattered over the country in the important cities.

Everywhere there exists the same drawback of lack of sufficient time for instruction in drawing, the scholastic branches crowding it out with their demands. Two prominent Government supervisors, Messrs. Colin and Pillet, presented the following proposition:

"Considering that in ordinary schools, both primary and secondary, the total number of hours devoted to drawing is necessarily very limited,"

1. Would it be better to distribute them throughout the whole school year, which would necessarily admit each week of only a very short duration of lessons?

2. Is it preferable, on the contrary, to restrict the teaching of drawing to only a certain number of weeks of the year, devoting more time to each lesson?

Resolved, The congress believing that there would be interest in deciding the advantages and disadvantages of each of the systems suggested above, asks that trial should be made of the second plan of organization in some institutions of secondary education.

Miss Speeler, of Great Britain, and Miss Nathusius, of Germany, read most interesting papers upon the methods of teaching in their respective countries, and then the section closed its sessions.

SECOND SECTION.—TECHNICAL EDUCATION.

The first question discussed was the "Statistics of technical education." M. Bécourt gave a short history of the rise and development of industrial and technical education in France, and submitted a list of 62 professions, classified in six groups, with the schools in which these professions can be studied. He expressed obligation to M. Paul Jacquemart and referred to his "Dictionnaire des professions et métiers." The congress expressed itself in favor of adopting the nomenclature proposed, and also approved the list of professions in which instruction in drawing is considered indispensable. This list, it requested, should be completed after conference with the foreign delegates.

Second question: Drawing in technical education.—The first paper treated of "Instruction in drawing in the technical schools preparing for the profession of architect or engineer." and elicited the following resolutions:

Resolved, That the congress expresses the wish that closer connection might be effectuated between the studies of the future architects and the future engineers.

A. By organizing in the schools for engineers studies aiming to make them com-

prehend form and its rôle in the creation of beauty by annexing if possible a course in aesthetics.

B. By developing in the schools for architects theoretic and practical instruction showing the methods employed by the engineer in his creation of the useful.

C. In what concerns instruction in drawing it is indispensable to introduce into the competitive examination for admission into the schools for engineers a test of plastic drawing from a model in relief and to raise the standard of the test-wash drawing.

The second paper considered (2) "Instruction in drawing in technical schools occupied with the crafts of metal—mechanics, locksmithing, bronze founding, goldsmithing, jewelry, etc.;" (3) "Instruction in drawing in technical schools occupied with the crafts of wood—carpentry and construction, model making, cabinet making, wood carving, etc." It was unanimously

Resolved, (1) That the congress, esteeming that general instruction in drawing is indispensable in all professions, in opposition to an opinion too prevalent, declares that it is necessary before all to give to a child this good general instruction.

2. That it expresses the desire that there should be established graphic models documentary and in relief to serve as base for technical instruction in each profession.

The next report treated the fourth part of the question, "Instruction in drawing in technical schools occupied with the arts of fire—ceramics, glassblowing, stained glass, etc." It dealt specially with the work of the candidates for admission into the schools rather than with that of the students in the schools, and with this in view the following resolution was adopted unanimously:

Resolved, That it is to be desired that the studies of the candidates for the schools of the arts of fire should make parallel progress on the artistic side and the scientific side, with the single aim that one should not be sacrificed to the other.

The fifth part of the question, "Introduction on drawing in technical schools occupied with the arts of women—dressmaking, embroidery, tapestry, lace, artificial flowers, etc.," urged more rigorous methods, and requirement of study of nature and of theoretic and practical design, and the congress adopted the recommendations unanimously, considering them the more important, since the material and the form are imposed by their predetermined result.

Resolved, It is to be desired that the women professors who destine themselves for these schools should possess the technology peculiar to one or several of the professions taught.

2. That in each of these schools the drawing taught should comprise simultaneously: (a) Drawing of imitation or by the eye, study direct from ornament and nature, artistic sketching, decorative arrangement, and applied design. (b) Geometric drawing, geometric construction and perspective, free-hand drawing of objects to be represented.

3. That in primary schools, drawing should be taught in a manner to prepare pupils for technical instruction, and to facilitate their passage into professional schools.

4. That there should be adjoined to the course of dressmaking a course of history of costume, and that in the last year the instruction should bear more specially upon the drawing of fashion models. After a warm discussion, an addition was

made to this resolution that the proportion and character of these models should approach more nearly to nature.

5. That a course of history of costume should be created in all schools occupied with the arts of women.

The next paper treated the sixth part of the question, "Instruction in drawing in technical schools occupied with divers arts—textiles, wall paper, bookbinding, cartography, and topography; industrial and scientific drawing."

Resolved, (1) That in all professional schools, and particularly in schools occupied, in esse or in posse, with textiles, wall papers, bookbinding, that besides purely technical or professional drawing and design, decorative composition also should be taught, keeping in view the technique and processes of production.

2. That in schools occupied with topography and cartography, not only should the knowledge proper to these industries be taught, but also general ideas of geometric drawing, in order to arrive at precise and correct representation.

3. That in technical and professional schools pupils destined for the profession of industrial draughtsman should receive ideas of perspective drawing and drawing of the figure, so that industrial and scientific drawings may have a more artistic and living character.

"The unification of symbols" used in drawing was then considered, and the congress expressed itself in favor of carrying out the international unification of signs and symbols employed in drawing and in various professions, and desired that a special international commission might be formed, charged with the study of the question.

"Harmonious action between the workshop and the courses in drawing" was the subject of the next paper, which was the last presented to this section. The following resolutions were adopted:

1. That in all technical courses (advanced and technical schools, courses for adults, etc.), the professors of drawing, those of manual training, and the professionals should act in concert.

2. That popular courses of drawing and competitive examinations between professionals should be established with the view to bind together more closely the professors of drawing and the professionals.

3. That the professor of drawing in a technical course should know the elements of the technology of the professions which are the specialty of the course.

4. That masters and pupils ought to have the greatest latitude in visiting industrial workshops, factories, etc.

5. That public and private enterprise should encourage by prizes and subsidies the creation of pedagogical technical works necessary for industrial education.

6. That in examinations and competitions in technical and professional education, the obligatory test in drawing should be chosen in view of the profession.

THIRD SECTION.—SPECIAL INSTRUCTION.

First question: Organization of special schools of drawing.—The first paper dealt with the actual classification of special schools organized by the central Government of France. It enumerated the different art decorative and industrial art schools, national, regional, and municipal; the regulations in force for their best functioning, with their advantages and disadvantages; and the proofs of professional

capacity and pedagogical aptitude exacted of the professors. After discussion, the following resolutions were adopted:

1. That the mode of organization of special schools should rest upon the responsibility and authority of the professor chosen to direct the organization.
2. That the candidates for professorship, having furnished the testimony of a diploma or certificate for training in drawing as the justification of their professional competency, should also be required to prove by experiment their pedagogical aptitude.
3. That teaching of drawing in all its forms should be confided to a special professor of drawing. Eventually and under particular circumstances specialists should be called in to give complementary technical instruction.

The second paper on the second question dealt with the "Organization of special schools of the city of Paris," and was equally exhaustive with the preceding one. The third paper discussed preparatory courses for special schools and elicited the following resolution:

Resolved, That all pupils of a special school of drawing, courses for adults, professional or otherwise, without distinction of profession, should possess a minimum of general knowledge of science, drawing, modeling, etc., or should acquire this minimum while pursuing their professional studies.

Third question: Pedagogy of the courses of application in special schools of drawing.—The first paper, treating of the general pedagogical processes to be adopted in diverse sections or subdivisions of applied instruction was unanimously approved.

Resolved, (a) That general ideas of the two kinds of drawing should be taught to all pupils indiscriminately, but only at the beginning of their studies, specialization being made later; (b) that collective teaching should be substituted for individual teaching in the largest measure possible, as well for general ideas and their application as for drawing by eye and geometric drawing; (c) that general theoretic instruction should alternate with industrial application or adaptations; (d) that models in relief should be substituted for graphic models in both kinds of drawing.

The second paper demonstrated the necessity of giving in the courses of application in the special schools technical education connected with the various professions of the students, and its argument was approved by the congress.

"The annexed branches in a special school" were then considered—(1) the programme and pedagogy of instruction in architectonics and the history of art; (2) programme and pedagogy of perspective; (3) programme and pedagogy of anatomy. The congress formally approved the desire that in the study of architectonics, plastic anatomy, history of art, perspective, etc., a limit should be fixed in each branch, and that its pedagogy should be determined, basing it (a) upon the category of the students to whom it is addressed; (b) keeping in view the knowledge already acquired by these pupils.

Fourth question: Teaching of construction in a special school.—The first paper considered "Construction applied to the industries of building—stonecutting, carpentry, etc.," and it was recommended in courses for adults that instruction in drawing should be specialized

just as soon as the pupils are able to make scale drawings and finished working drawings.

The second paper on the fourth question considered teaching of construction applied to the "Mechanic arts," its program and pedagogy, and the relation between the school and the trade, while the third paper discussed the teaching of "Construction in applied art." The resolutions adopted were as follows:

Resolved, (a) That in all special schools where there exist divisions of application to the mechanic arts there should be collective and organized lessons in construction, this particular instruction being given, according to the importance of the school, by the professor of drawing or by special professors.

(b) That in all special schools the programme should comprise not only the teaching of scale drawing and finished working drawings, but also original designs or plans.

"Teaching of decorative composition in special schools" was the subject of the next paper, which was the final one of the third section, and without discussion the congress indorsed its recommendation that instruction in decorative composition should be carried on simultaneously in the studio with individual work and in the lecture room with collective theoretic training.

In the last plenary session, held on September 1, the congress formulated the wish that donations, prizes, and traveling scholarships should be instituted by public administrations, by chambers of commerce, and through private initiative, and also desired that the public administration, by such means as it deems fit, should provide for the education of teachers who, not having passed through a normal school or otherwise acquired sufficient knowledge of drawing, are not capable of applying these desired reforms.

The formal closing session was presided over by M. Henri Roujon, director of the fine arts, who reasserted the interest felt by the ministry in this convention of teachers of art and applied art, and promised that the reforms suggested in the resolutions should receive serious consideration by the French Government. After expressions of international good will, this first international congress upon instruction in drawing adjourned, having thrashed over the whole wide field, collected invaluable pedagogical statistics—of French methods of training especially—and put on record its authoritative sanction of many self-evident principles already practiced by progressive educators, with the view doubtless that this initial work should serve as a broad organized base for future action in the next congress, already planned.

CONGRESS OF ELEMENTARY EDUCATION.

By AMALIE HOFER,

Editor of the Kindergarten Magazine.

The international congress of elementary education was held in the Sorbonne, the central building of the Paris University, from August 2 to 5. On the morning of organization a crowding mass of men and

women teachers secured their official cards of admission and were directed to various halls where the section work was to be done. The general secretary, M. Trautner, displayed vast forbearance during these preliminaries, as was required by the excitability of his countrymen and countrywomen. I had been impressed upon reading the rules by which the congress was to be governed, that they were unnecessarily severe and military in nature, but I soon discovered the cause. The French delegates were naturally in the great majority, and their national methods of debate require a soldier at the gavel. The general congress was opened by the president, M. Gréard, vice-rector of the Académie de Paris, the grand amphitheater of the Sorbonne being filled to its entire capacity. The five sections were grouped about the following subjects: "Educational management," "How to regulate school attendance," "Moral training," "Secondary schools," "Post-graduate institutions."

My companions consisted of a professor of pedagogy of Vienna and a Bohemian woman philanthropist, resident of Paris. We voted to attend the section discussing de l'éducation morale, the printed report having been prepared by M. Jules Payot, and being represented by him. The delegates held the printed matter in hand as M. Payot offered each paragraph for discussion. Several hours of hot battle ensued in the great quest of a definition for "moral" which should satisfy French Catholic, Jew, and Protestant, to say nothing of the mixed peoples present from such contrasting civilizations as Turkey, America, Russia, and Africa. The entire debate was in the French language, the delegates from distant lands holding their peace for the most part. At last came the lunch hour, and our little group extended the discussion à la international over the coffee at a students' restaurant in the neighboring French quarter.

A second session and a third session were spent in the discussion of this great subject—the place of moral training in the school. At the general session, held on the afternoon of August 3, the intensity of the delegates reached its height. Brilliant repartee and eloquent speeches, more or less fired by the personal religious views of the speakers, were either applauded or hissed, until we doubted whether this was a body of pedagogues or an assembly of "bulls and bears." Our own Dr. Harris occupied the chair of honor at the right hand of President Gréard, and his inimitable calmness afforded a splendid contrast to the ceaseless rappings of the chairman's gavel.

One of the most telling addresses made during the discussion was that of Mlle. Henriette Meyer, a young French woman who has distinguished herself as a doctor of philosophy. She was graceful and gracious, and her gentle voice was intense with feeling as she claimed that equality was the keystone of morality, and that parents, both fathers and mothers, should be responsible for the first standards of



CITY OF PARIS BUILDING, EDUCATIONAL EXHIBIT, PRIMARY SECTION.

morals dans la famille. Mlle. Meyer's words brought out the unbounded enthusiasm of the audience and changed the current of the discussion.

Every courtesy was extended to the delegates by the city authorities. Free admissions to the great theaters, including those of Coquelin and Bernhardt, were to be had on application; also free access to the Exposition during the five days of the congress, and banquets and receptions by officials of the city. Dr. Harris spoke at a banquet given in the quaint "Old Paris" in the Exposition. His greetings and words were warmly received.

Three hundred teachers in one body enjoyed a day at Versailles on August 7, leaving Paris on an early morning train and returning late in the evening, having seen the marvelously beautiful fountain display by moonlight.

At the dinner at Versailles many enthusiastic toasts were responded to, and the Spanish representative frankly expressed his surprise and offered his compliments to the share taken by women in the deliberations of the congress.

REPORT ON THE CONGRESS OF PRIMARY EDUCATION.

By ANNA TOLMAN SMITH,

Member of the International Jury, Group 1, Class I.

The congress of primary education in connection with the Paris Exposition, to which I had the honor of being appointed a delegate from the United States, was held in the Sorbonne, August 2 to 5. Although the congress was organized in sections, and overlapped in time the sessions of the congresses of secondary and of superior education, there was no confusion nor crowding. The section meetings were assigned to class rooms, office and waiting rooms were conveniently at hand and plainly indicated, and the amphitheater, with its noble statues and beautiful mural painting, afforded an ideal place for the general sessions.

In its organization the congress marked an advance over previous congresses of the same class in France. It was not ordered by the administration, but started by schoolmen, acting in the spirit of professional freedom and of international sympathy. The programme was announced several months beforehand and papers on the general topics solicited from different countries. As the event proved, the formal papers and the discussions related almost exclusively to French conditions, but this fact should not be allowed to obscure the spirit in which the work had been developed under the auspices of the general secretary, M. Jost, one of the most distinguished and genial schoolmen of France. At the opening session the eminent rector of the Academy of Paris, M. Gréard, was unanimously chosen president. The assembly on this occasion was large, comprising about 1,500 French teachers

and officers of education and 200 foreign delegates. On the platform with M. Gréard were the delegates of the ministry of public instruction, M. Bayet, chief of the department of primary instruction, and M. Jacoulet, honorary inspector-general; distinguished delegates from foreign governments, and the official committee of the congress.

In his inaugural address, M. Gréard struck the keynote of the social transformation which the Republic has silently accomplished in France through the elevation of primary education. He recalled that in 1869, before a commission on higher education, M. Guizot, author of the primary school law of 1833, regretted that primary instruction was not represented in the commission. "This reproach," said M. Gréard, "is no longer possible. Primary education has its place in the great councils to-day. In these it treats its own affairs with competence and discusses general interests with lucidity and wisdom." As the most important aim of the future, M. Gréard signified the enrichment of primary instruction, and this not by overloading the programmes, but by elevating the spirit and improving the methods of instruction, and further, by prolonging the period of school attendance or of formal instruction. This in his opinion would be accomplished by a judicious balancing of general instruction with technical training in the public high schools, and by the liberal provision of auxiliary agencies, as evening schools, popular lectures, etc., for adults whose school training has been limited. M. Gréard touched upon the principal points in the questions to be considered in the congress, and expressed the hope that the conclusions that might be reached would excite interest in all countries and be fruitful in new views and in modifications of existing conditions.

For practical work the congress was organized in five sections, according to the number of subjects proposed for consideration, as follows:

1. Instruction in domestic economy and industry (education ménagère); definition, limits and adaptation to the different grades.
2. School attendance (fréquentation scolaire).
3. Moral education; objects, principles, methods and processes.
4. Superior primary education; object, limits, means of adapting to regional and local interests (county and district).
5. Continuance of education after the school period (institutions post scolaires); adult courses, popular lectures, etc.

The "memoirs" that had been received by the respective sections during the months of preparation had been confided in each case to two secretaries, one of whom analyzed the contents of the papers and the other summed up the positions taken by the authors. In this way each question was developed in all its aspects before the section meetings and free discussion invited. Thus, while the programme was strictly followed, there was full opportunity for all members to secure a hearing.

The question of making instruction in domestic arts a feature of all primary schools, including even infant schools, was treated in the first section. Mlle. Brès, general inspectress of infant schools (*écoles maternelles*), who had analyzed memoirs for this section, created a sensation by insisting that the instruction should be given alike to boys and girls. She maintained the position so effectively against lively opposition that it was embodied in the final resolutions. During the discussion M. Bergman, inspector-general of public schools in Stockholm, explained that this course is pursued in that city, where boys and girls go to the same school until 10 years of age, and have the same exercises in knitting, sewing, and the repairing of garments. Mr. Lyulph Stanley, of the London school board, gave an interesting account of the cooking classes connected with the board schools, in which 44,000 girls are taught to prepare food properly, and the laundry classes, in which 24,000 girls learn to wash and iron.

The conclusion was recorded by the congress that domestic training should be given in all classes of primary schools, with certain modifications in the schools for boys, and that it should be intrusted to women teachers, who must give proof of special competency for the work.

To the second section of the congress had been intrusted the most important of all the questions considered, namely, that of "regularity in school attendance." The discussions exposed a condition upon which French statistics usually throw no light. It has long been evident from the official reports that practically all the children of school age are enrolled in school or instructed in some measure, but as the average attendance is never given it is impossible even to guess what amount of schooling this fact implies. From statements made in the congress, and the agreement as to the necessity of reform in this particular, two things were evident: First, that the compulsory law is poorly enforced in many communes; second, that the attendance committees (*commissions scolaires*) are of little account. In the absence of statistics there was no real measure of the irregular or nonattendance, but its reality was admitted, and the force of the discussion was expended on the means of correcting the evil. The opinion was expressed that the compulsory law should itself be strengthened, but this point was not embodied in a resolution. The main resolutions carried were that the communal funds in aid of poor children should be continued; further, considering that under a democratic government the efforts of all patriotic spirits should be united in the interests of the schools, the congress esteemed it desirable that a school council of representative men, the fathers of families, should be formed in each commune to look particularly after the children of school age and to promote their material and moral welfare.

The sessions of the third section were occupied with interesting discussions of the question of moral instruction, its nature, the principles

upon which it should be based, and the method of instruction appropriate to the subject. The conclusions were reached that moral instruction should occupy the first place in the primary school; that it should be based upon reason or the law of mutual respect, and that it should be independent of, but not hostile to, religious instruction.

The fourth section was occupied with the question of the higher primary schools, a grade below our high schools, and having large development on the side of industrial art. The discussions turned particularly upon the scope and gradations of industrial as distinguished from general education, and the means of breaking down the social distinctions that separate the system of primary education in France from the classical schools without destroying the practical character of the former. This second consideration was recognized as one of profound significance for the country, but no satisfactory solution was offered. The current of feeling on the subject was evident from the interest shown in a brief paper presented in this section by the delegate from the United States. The paper treated of the distinction between the American high school and the French higher primary school. The statement that the people of the United States oppose distinctions in the public-school system, which imply absolute or permanent social distinctions among the people, was particularly applauded.

In his address before the opening session of the congress, M. Gréard had expressed the opinion that these distinctions are diminishing in France. He attributed the change to the growing appreciation in the higher educational circles of the sound principles and the effective methods applied in the primary system. The section ratifying the resolutions which summed up the prevailing views of the congress, which were evidently inspired by the influence of the president, M. René Leblanc, expressed the opinion that the higher primary schools should be carefully distinguished on the one side from the schools of practical industry—that is, art or trade schools—and on the other from the classical secondary schools.

The fifth section of the congress considered the question of auxiliary or “post-school” agencies for continuing the formal education of the adult masses. This is a work upon which France has entered with immense spirit during the present decade, and which has been maintained and developed with persistence and ardor. From the nature of the subject the discussions in this section were more vague and diffuse than in the other sections, where all the proceedings centered in definite propositions. The subject, however, proved to be one of general interest, as was shown by the number of communications from foreign countries. These, as summarized by M. Edouard Petit, afforded a comprehensive review of what may be regarded as a great social movement affecting the principal countries of the world. The movement has assumed different aspects in different countries, and there were included in the survey agencies as varied as the University

Extension of England and the secular Sunday schools of Russia; but it was made evident that all were animated by the same purpose, namely, the elevation and practical advantage of the laboring classes. France has contributed to the movement two original experiments that greatly interested the foreign delegates to the congress. One of these is the institution of mutual aid societies among pupils, the other, associations of former pupils pledged to continue their interest in their old school, to foster the intellectual development and social pleasure of their members, and to promote a lively interest in all efforts for improving the conditions of the working classes.

The importance of this subject was emphasized by its revival in the full session of the congress, where it divided attention with the question of the higher primary schools. The resolutions of the section affirming the necessity of the post-school agencies and the importance of all the lines along which these are operating were confirmed in the full session.

Since the subject is agitated in all countries it was recognized that an international bureau or society for the exchange of information would find in relation to this movement its special mission. The proposition to form such a society, which originated at the banquet of the jury on primary education, was accordingly brought up and confirmed in the congress. It was resolved to make the committee of the congress the official bureau of the society. M. Bourgeois graciously accepted the presidency of the society, which thus, to quote M. Bayet, has its future assured as a living and permanent institution.

The closing public session of the congress was honored by the presence of the minister of public instruction, M. Leygues, who in a brief address emphasized the important relation between public education and the safety of a people. He saw in the congress the augury of a better social era which will insure to France "more of prosperity, justice, and liberty, and develop between all nations a higher degree of union and solidarity."

The final ceremony of the congress was a grand banquet in the restaurant of the nations in the "Vieux Paris." Above 600 members participated, and in the absence of the minister of public instruction, occasioned by the sudden death of the King of Italy, M. Bayet, chief of the primary department, presided. In the toasts, which occupied an hour and a half, two remote colonies of Africa—Tunis and Guadeloupe—and eleven other foreign countries were represented by their delegates. The banquet terminated to the stirring strains of the Marseillaise. To the foreigners, who were invited guests, its memories remain as a perpetual sign of the unbounded hospitality and social charm of their colleagues of France.

NOTE.—A very full report of the proceedings of the congress will be found in the *Revue Pédagogique* of October 15, 1900.

REPORT ON THE CONGRESS OF PRIMARY EDUCATION.

By HENRIETTE TISNÉ.

The international congress of primary education was inaugurated on the second day of August at the Sorbonne. It brought together 1,109 French pedagogues, of whom 348 were women, and 188 foreign educators. Although the French department of education was officially represented by over 300 school inspectors and normal school directors, the congress did not have, as heretofore, a governmental character.

The questions presented for debate were five in number:

1. "Domestic economy," comprising cooking, the care of the household, needlework, care of infants, laundry work, etc.

Without much dissension, or even argument, the congress, under the presidency of M. Gréard, passed the following resolutions:

First. The teaching of domestic economy to girls is essentially the task of the mother, but belongs nevertheless to the school.

Second. The teaching of domestic economy consists in its entirety of the practical and theoretical knowledge of those things that go to the making of a good housewife. It comprises the purchasing, preserving, and preparing of food; the art of setting a table; the cutting, sewing, and making of garments; washing and ironing; the care of clothing and furniture; the hygiene of the home and of children; the care of infants and of the sick; and the art of beautifying the home. The teaching of domestic economy should be obligatory in all grades of the primary schools.

Third. Practical teaching, as opposed to theoretical, must form part of the teaching. This applies to all grades.

Fourth. This teaching will be intrusted to women specially prepared for the purpose. It would be desirable to form a training school for the preparation of such teachers.

Fifth. Questions on domestic economy will form part of examinations for the diplomas of primary, secondary, and normal schools.

Sixth. Townships should be invited to found special domestic-economy courses, household schools, and cooking schools.

Seventh. It is to be hoped that post-scholar institutions, orphanages, benevolent educational societies, labor unions, model schools, etc., will include domestic economy in their curriculum.

Eighth. Domestic economy, being as necessary to the father as it is to the mother, it must in a certain measure figure in the programme of primary schools for boys.

Ninth. Hygiene and education of infants should be one of the principal objects of domestic economy.

These resolutions, prepared by Senator Paul Strauss and Mademoiselle Brés, superintendent of kindergartens, were adopted without amendments.

It is the first time in the history of congresses on primary education that the question of domestic economy was put up for discussion.

The second question slated was "school attendance." The question was treated purely as one particular to France, and not as a general one, and it was only considered as far as it affected the public-school system of France.

Over 4 per cent of the children of France of age to attend school remain away in spite of the law which imposes the penalty of imprisonment upon the recreant parent. The congress voted to substitute a fine for the imprisonment, and also asked for the repeal of the article of the compulsory-attendance law which demands the posting of the names of absentees from school at the city hall door.

Private schools are to enforce the compulsory-attendance law, as well as public schools, and school inspectors must include such schools in their reports. Mayors are to furnish yearly a list of all children in their townships of from 6 to 13 years of age. The discussion being purely local, I did not enter into it further than to furnish the congress with statistics on school attendance in the United States.

The question of moral education, no doubt the most interesting one on the programme, was next in order. The executive committee, charged with preparing the question of moral education for presentation to the congress, received forty-four treatises on the subject; four of these were from foreign delegates.

The first séance was devoted to the abstract discussion of the subject. Various philosophical views upon the object and the principles of morality were aired; but this was in no way a debate, every delegate being seemingly of the opinion of his opponent. The clerical representatives attempted to bring the question upon the ground of religious education; but in vain. No finding of the congress on that score would have been operative, since French law has already decided that education is to be neither lay nor clerical, but neutral.

This point once settled, the congress debated at great length on the theoretical shaping of the child's mind. Respect and justice toward the child, after the awakening of his conscience, were decided as necessary as kindness and love and sincerity. Social education was decided to be the complement of moral education. Upon my motion, it was also decided that the moral education of the woman should be the same as that of the man. This was difficult to obtain, the congress being international—that is to say, 99 per cent European.

After three sittings the congress passed the following resolutions:

1. Any question touching upon the religious confessional education of the child in the school is dismissed from the deliberations of the congress.
2. Moral education has as an end the making of honest men and good citizens.
3. Moral teaching is based on reason; that is to say, on enlightened conscience. It strives to develop in the child the sentiments of sincerity, justice, kindness, solidarity. It must be identical, whether applied to man or to woman. It is independent of any creed, though hostile to none.

4. Moral education should occupy the first place in school. It should be the subject of a lesson each day, being inseparable from all other branches of learning.

5. The congress considers that the main object is to develop the will of the child, to instill the courage to do good, which courage will eventually become easy from habit. In order to do this, one must love him and know him well and make the teaching of morality as attractive as possible to him. Besides, one must aim to render children honest, brave, and full of initiative, for an honest man who remains inactive is the accomplice of the evil doer whom he does not oppose.

6. The congress—considering that we must raise children so that eventually they may be their own legislators, considering that the child can not better himself unless he helps to his own education—expresses the opinion that liberal discipline, which respects and loves the personality of the child, is the only one which can make free men.

7. The congress—considering that the conscience of the child is the less developed when youngest; that there are cases when the schoolmaster can not justify, in the eyes of the child, the orders given—expresses the opinion that liberal discipline does not exclude the principle of obedience, but that the authority of the master must gradually efface itself as the conscience of the child develops, and that it is only legitimate if it brings the child to live eventually under the sole authority of his own conscience.

8. The congress expresses the wish: That new programmes lead all education toward social education; that laws be passed against the immoral press and the exhibition of obscene pictures; that strict measures be taken to check alcoholism; that the publishing and distributing of simple works (fiction, tales, biographies), attractive and of high moral inspiration, be encouraged, and that such books be placed in school libraries.

The fourth question brought into discussion before the congress was “Higher primary education.” The congress on secondary education, for which I had prepared a paper, being then also in session, I did not attend the debate on this question; but Miss Tolman Smith, who took part in the discussion, will be able to report on it.

The fifth and last question presented for debate was “Post-graduate institutions.” After a very cosmopolitan and therefore interesting séance, at which Mr. Léon Bourgeois himself presided, the congress passed resolutions encouraging the founding of courses and lectures for adults in civic economy and contemporaneous history. It also urges that public libraries be allowed to interchange their books. The mutual aid societies in the schools were indorsed and warmly eulogized. The Anglo-American university extension system was also indorsed.

REPORT ON CONGRESS OF SECONDARY EDUCATION.

By MARY C. WHEELER,

Principal of College Preparatory School, Providence, R. I.

The first international congress of secondary education was held in Paris at the Sorbonne from July 31 to August 5, 1900. This congress comprised not less than 303 members. In 1889 there had been a congress of superior and secondary education, but it was decided to have separate congresses for 1900, because the problems of secondary edu-

cation had attracted great attention and aroused public opinion all over the world. The universal discontent, which had received the name of "crise," gave rise to questions concerning the social rôle, the methods adopted, and the teachers employed in secondary education.

A commissioner of organization was constituted in January, 1900, and the following circular was sent out:

The question of secondary education is, in the different countries of the world, one of the social questions which is being most considered by reflecting people, because it is the most intimately connected with the many changes of our present society.

Secondary education, formerly reserved for the select few, is now coming more and more within the reach of the great masses who seek in it the advantages of a higher order of intellectual culture. An international congress of secondary education would have for all nations the great advantage of bringing together educators who are insufficiently acquainted with each other, of considering those methods which would derive great advantage by being used mutually to compete or supplement each other, and of defining the rôle, the function, and the real extent of this teaching as related to primary and higher education.

Eight subjects of discussion were given out:

I. "What diversity of social needs should secondary teaching meet, and how should it adapt itself to them?" Rapporteur, M. Max Leclerc.

II. "Concerning the autonomy (desirable) in the establishments of secondary education and the diversity of methods to be employed." Rapporteur, M. Kortz.

III. "University extension." Rapporteur, M. Henri Berenger.

IV. "In what measure, to what degree, and by what means, is it desirable to develop the personality of the pupil and his individual power of action." Rapporteur, M. Beck.

V. "Preparation of teachers for secondary instruction." Rapporteur, M. Picavet.

VI. "The rôle of men and women as teachers in the education of boys and girls." Rapporteur, Mlle. Dugard.

VII. "The assistance given in the education of boys and girls by means of associations, indorsement, and practical philanthropy." Rapporteur, Mlle. Salomon.

VIII. "Interscholastic, international correspondence." Rapporteur, Mlle. Scott.

At the first sitting of the congress, in the Amphitheater Guizot, presided over by the president of the commission of organization, M. Alfred Croiset, of the 303 members inscribed nearly 300 were present, 31 being official delegates, 272 members. Out of this number 183 were French, 120 foreigners. The nations represented were as follows:

Country.	Official delegates.	Adherents.	Country.	Official delegates.	Adherents.
Russia	2	30	Servia	2	1
England	4	14	Peru	1	2
United States	9	8	Roumania	1	1
Hungary	2	9	Argentina	1	1
Italy		8	Norway	2	
Turkey in Egypt		7	Sweden		1
Germany		3	Holland		1
Switzerland	2	2	Herzegovinia	1	
Japan		3			

One of the interesting aspects of the congress was the presence of about 20 eclesiastice, mostly from the Brotherhood des Ecoles Chetèti-

ennes, who were grouped around the eminent superior-general of their order, Frère Justinus.

The American delegates were: Dr. W. T. Harris, Commissioner of Education; Dr. Dabney, president University of Tennessee; Miss Mary C. Wheeler, principal of College Preparatory School, Providence, R. I.; Mrs. Lucy Hall Brown, Brooklyn, N. Y.; Miss Annie Tolman Smith, expert, Bureau of Education; M. Louis Soldam, superintendent public schools, St. Louis, Mo.; Professor McKean, Dickinson College, Carlisle, Pa.; and Mme. Henriette Tismé, 21 rue De Camp, Paris.

As nearly all foreign members of the congress were present and some of the French members absent, the French and the foreign element was about equal, a large majority being formed of teachers and directors of schools.

First question: "What diversity of social needs should be met by secondary education, and how should the teaching adapt itself to them?" This question in reality is the most important of them all, for, by the manner in which it is answered, will other problems be deeply influenced.

The report, philosophical and experimental, formed a sort of international investigation, in which foreign delegations were especially invited to share, and its main points were as follows:

Questions of teaching are social questions, especially that of secondary education, and can not be treated in the same manner in an aristocratic society and in a democracy.

In a society of recent origin, free from military duties, and in one face to face with the necessity of adapting to the new conditions of the economic struggle those financial obligations which are an inheritance of past generations, conceptions of secondary education must differ from those of older countries, according to the social condition of each country. Certain points are common to all, and others are variable; that which is common to all being the ideal proposed, namely, the rôle of the cultivated man in the modern world—everything that contributes to the moral, physical, and intellectual preparation for this rôle; that which is variable being the modifications which must be made in adapting this ideal to the geographical and historical conditions of each country.

All nations taking part in this congress will take a deep interest in this question, "What is the social rôle of secondary education?"

In answer to the question, "What is meant by secondary education?" the rapporteur gave the following definitions: In France it is, strictly speaking, given before the age of military service to that small minority of children whose parents have the means of paying for their education, and to such children of poor families as have obtained recompense for ability shown. The education given is always of utility, but not necessarily of immediate utility. It is a teaching of



VIEW IN SECONDARY EDUCATION SECTION. DEPARTMENT OF EDUCATION. GROUP I. CHAMP DE MARS.

general culture, which prepares the student for life and not for a profession, but which does not, nevertheless, exclude preparation for any profession. If one compares the nation to an army, secondary education is for those who will become the officers in the army. If, then, continuing the comparison (1), more children are educated than are necessary to recruit the officers there would be, as a result, waste, discontent, and danger of a crisis; (2) if, by the programme or by the tendencies of the teachers in charge, certain children are fitted for certain professions to the exclusion of others; if they are trained for the professions called liberal and not for industry and commerce—having received an education little adapted to the latter—then secondary education has failed in the chief of its duties, which is to prepare for life and not for this or that profession. Hence, this results also in social discontent. This discontent may be produced (1) by excess of population in the institutions of instruction; (2) by failing to adapt the programme to the new social and economic necessities; (3) by an insufficient education of public opinion.

We ask, then, the following questions: (*a*) “What is the place and the rôle of secondary teaching in society?” (*b*) “What is its action on society?” (*a*) Countries with an aristocratic organization. England, in spite of the progress made there by democratic ideas, belongs in this category because it has no public secondary education. It has not completely freed from aristocratic tradition its conception of secondary education. It possesses groups of institutions corresponding to its social classes and to its historic foundations. The phrase is turned away from its true sense because it does not embrace public schools where “gentlemen” are formed, and is simply used as a term for those schools where are educated the middle classes. (*b*) Countries with democratic tendencies, where the organization is of aristocratic origin. France comes under this category, the programmes, the pedagogic methods, the very spirit of teaching being still under the influence of those beginnings of the ancient régime. The popularity of most of the religious establishments of secondary education is due to the survival of aristocratic traditions. (*c*) Countries with democratic origin and organization. One of the surest means of characterizing and classifying the scholastic organization of a country is to consider the relation existing between the three orders of instruction—primary, secondary, and superior—according to the manner in which these orders of teaching exist in juxtaposition, without penetrating one into the other, as strangers, or, on the contrary, closely uniting and fitting one into the other, may one judge of the progress of modern ideas and of democratic organization in a society.

In France the dream of the convention “to establish the continuity of primary, secondary, and superior teaching, that is, public instruction from its base to its summit” is still, after a century, not realized. The

elementary classes of the lycées and colleges have been established and maintained to separate the children of the bourgeoisie from contact with the children of the lower classes of society in the public schools. The three orders, like the three classes of teachers over them, are separated by defined boundaries.

In Holland, Denmark, Roumania, Switzerland, Norway, and Scotland there is no barrier between the primary school and the secondary establishment.

In the United States primary and secondary teaching are one. Countries which, like France, desire to throw down the barrier between the different orders, and which see the teachers in these orders trying to unite, notwithstanding the obstacles, are interested to learn how this problem has been solved; especially how aristocratic prejudices have been overcome, and how democracy has realized, from the very beginning, the principle of fraternity of organization.

To characterize the special rôle of secondary education it is necessary to reply to the second question: "What is its action on society?" In other words, What is its influence in recruiting for the different professions?

In Germany, according to the late statistics, out of 4,587 pupils who left the gymnase with certificates, 3,342 entered the universities. For the majority, then, secondary education is a preparation for superior. In the United States, on the contrary, the proportion of pupils from the secondary schools who enter the universities is almost insignificant.

France occupies in this respect an intermediate place between the two, and yet for France we must take into account the artificial action of military law which, since 1889, incites large numbers of youth to examinations for which they have no natural tendencies.

Another question concerning secondary education and its influence on society is the eternal and famous controversy between the classics and the moderns. In France the degrees of law and of medicine are refused to young men who have elected the "modern" education. From all these facts, as well as many more, an international inquiry is necessary, from which can be drawn conclusions of the highest social importance, after which we shall be better prepared to ask this important question: "How establish an equilibrium between the social needs and the resources which secondary education should offer?" Mme. Hariet Tisné aroused great interest by her contribution to this discussion.

Other interesting discussions followed. One characteristic fact seems to dominate, namely, that secondary education is nowhere a democratic education, but rather one reserved for the social class commonly called the bourgeoisie, and which only a very small proportion of the lower classes enjoys.

M. Bérenger endeavored to show that secondary education thus understood did not correspond with the evolution of modern democratic ideas; that such a definition would accentuate instead of attenuating the division of humanity into those classes which, by being isolated, finally become enemies—the bourgeoisie and the “proletariat;” that there was no reason nor any justice in founding secondary education on the principle of the riches or the social condition of families. In a word, it should be distributed to the most intelligent children without respect to birth. An order of the day was framed as follows: Congress passes the resolution that secondary education is becoming inspired more and more in the different countries by the democratic spirit, and that it is associated with primary education by a series of reforms, thus offering to all the children of the nation a common education. This resolution appeared exaggerated to the great majority of the congress, and was decisively opposed by Mr. Stanley, of the school boards of London. After a lengthy discussion the following resolution was proposed by M. Croiset: “That in secondary education in different countries the diversity of methods be adapted to the diversity of the social needs.” This resolution had the advantage of satisfying most of the members present, with perhaps the disadvantage of possessing only a formal value. M. Bérenger recognized that his proposition was premature, but stated that he must maintain it with the hope that it would be adopted at a future congress. His proposition was rejected and that of M. Croiset was adopted.

Question of autonomy in the establishment of secondary schools seems to me to be of less interest to the Americans.

The rapport on autonomy was presented by M. A. Korts, professeur du Lycée Montaigne. He stated that while this question was one of general importance, and of necessity one that should come up at the congress, a great agitation existed in France, and as this agitation was increasing, she would, more than any other country, benefit by the discussion.

He defined centralization as an evil; as, soon becoming tyrannical, it impedes the working of the organization, takes the vitality, and thus becomes a cause of weakness and degeneracy; but restored to its true rôle it is an indispensable principle, one that is tutelary in maintaining a unit out of many parts, with the desirable solidity—a sort of equality and even partial independence, as it were, so that it has been clearly defined as meaning “despotism for the sake of liberty.”

Decentralization is a blessing in the precise degree in which it stimulates the vitality of the elements which it disfranchises, and no one should be afraid of being led too far by it, provided it does not reach the point of compromising the unity of direction of the natural education and of turning it into anarchy. We need to fear only the purely apparent anarchy, which exists only as M. Alfred Croiset

has so justly said, "In the eyes of certain classicists, more carried away by the outside form, and by the factitious unity than by the complex harmony which is the sign of life."

In face of this centralization, oppressive by means of its exaggerated minutiae, rise latent irreducible forces, which, without ceasing, react against it, enervating its power of action and impeding its machinery to the point of final dislocation. These are diversity of surroundings and conditions, revolt of the feeling of personality, the universal tendency to freedom of thought and of word; there is also, with every individual who teaches, and for the strongest reasons, an instinctive imperious need of creating and innovating; and from all these confused aspirations is formed sooner or later a conscient power of resistance against which no law can prevail. Unfortunately, there is in all this only a power of resistance, and we can not say of these forces which thus amalgamate that they are active and free, but only that they are ready for liberty and action.

The whole paper treated of the sterilizing results of excessive centralization in France and of the need of reform. In short, the many difficulties now met with in France were considered, and the following questions asked:

I. What are, in secondary establishments, the best conditions of autonomy? (*a*) in countries where there is slight centralization; (*b*) in countries where the centralization is powerful.

II. What should be the rôle of the director on the one hand and of councils and assemblages of functionaries on the other of every order in establishments where there is autonomy; also their respective situation and relation?

III. The part reserved, in an establishment where there is autonomy, to the cooperation of the councils of administration, committees of patronage, associations of former pupils, etc.

The information volunteered by the different delegates was of great interest. M. Winkler, of Hungary, said that there was in his country a general supervision with insufficient autonomy for the teachers. Mr. Stanley, president of the school boards of London, showed that in England, where autonomy appears at first sight to be complete, every great educational establishment soon passes under the control of departmental councils, who subsidize them. What with the universities that furnish scholarships, the ministry which acts by decrees, and the Government which refuses subsidies, English institutions of learning are threatened with the danger of losing autonomy, and the only refuge for this is public opinion. M. Rodzedius stated that in Russia there are numerous types, some gymnases, classiques et écoles reales, depending directly upon the ministry; others, private schools which privileges from the State are half ministerial; others, private schools not privileged by the State, enjoy a greater liberty.

M. de Loeve, of St. Petersburg, said that the boys' school enjoyed great freedom in Russia, especially in the capital; that centralization, which is very strong from a legal point of view, is not practically inconvenient.

M. Ianimoto, of Japan, stated that while centralization is very strong, autonomy really exists as an aid for directors and professors of schools, because they can modify the ministerial regulations. Public sentiment favors independent schools, and the ministry itself is opposed to uniformity of secondary education. M. Tyspa, from Belgrade, stated that politics dominated Servia secondary education; the ministry did not occupy itself with the inherent needs of the different schools, etc.

The following resolution was adopted:

That in the direction and administration of establishments of secondary education there be a greater autonomy given to these establishments, as well as development from the point of view of their local life and tendencies, under the control of proper authority.

This resolution was adopted, thus showing that it was the view of the congress that without independence there is no good education or instruction.

The rôle of male and female professors in the education of boys and girls was evidently introduced into the congress not only because it is of importance in itself, but it is a preface to an attempt for coeducation and secondary teaching in France. This report showed a philosophic, precise, intuitive, and methodical mind. Mlle. Dugard impressed the congress with the logical deduction made from the premises she presented which were well thought out and logically sustained. The subject was less interesting to Americans, because we have that happy condition of things of this country which she desires for France.

Miss Wheeler, principal of secondary schools, Providence, R. I., spoke as follows on the subject:

As to the question of male teachers in the education of girls, I have seen great results attained. When the young girl is of the right age to form her judgment the male teacher may have a great influence over her in the study of literature or history. I do not mean simple history, but general social history—at the age when she must begin to read by books and not learn by page—and above all in the sciences, for perhaps man has a more scientific mind than woman. I would put the age where it is desirable to give the girl male professors at 16 or 17.

It is not, however, upon this point that I wish to insist, but on the other, namely, the female teacher in general education, whether for boys or girls. To judge of the place of woman in our American education it should be remembered that all over our country primary school teaching, and to a large extent the teaching of our secondary schools, until the age of 16 or 17 years is in the hands of women. This has come about in the most natural manner. In the formation of our schools in our cities and in our rural districts the number of children was so limited that the question of division of sex was not to be considered; coeducation was absolutely necessary and woman found her natural place in this mixed school, being very often at its head.

She was often forced to remote districts to give instruction to all classes and in all sorts of studies. For this woman possesses a special gift, for she can adapt herself more easily than man to new conditions which exist in the schools as well as in life. The whole history of the district school in America might be used as proof of this. One may see to-day in the same public school in America, above all in the country, children of the best classes side by side with the Irish or Polish emigrant, the French Canadian, or the Jew, who may or may not speak English, for often in our rural districts there are no private schools. Our higher schools have, generally, a male principal with many assistants, of whom the great proportion are women. I do not see how our system could be improved upon; women are very capable in their comprehension of the needs of boys. I have never in my experience heard a boy say that he preferred a man rather than a woman as teacher. Perhaps the greatest danger of the woman teacher is that she has the instinct of helping too much or, on the other hand, of mastering or dominating the will of the pupil; this should be constantly guarded against in the education of the young, for the pupil must learn in the secondary school how to work independently.

UNIVERSITY EXTENSION.

For the consideration of this subject, the congress of secondary and superior education met together, two reports being read by M. Larnaude and M. T. Bérenger, secretaries of the two congresses. Of all the discussions which arose in the two congresses, that upon university extension was considered the most remarkable, the most eloquent, and the most significant. Four hundred members were present, and had as a matter of discussion the burning problem of the relation between men of letters and the people. There being an entire agreement that university extension has for its object to become the complement as it were of primary instruction for young and old, the point discussed was in regard to the ideal to be carried out.

M. Croiset opened the discussion by a brilliant and scholarly address, "that which ought to characterize the movement of university extension is the desire to spread in society the scientific spirit, for that from which the different social classes suffer the most, whether it be higher or lower classes, is from their prejudices and their fanatisms, on religious or other grounds, and their reason and sense of justice is retarded by the error, the hatred and the misery which follow as a consequence. The scientific spirit alone can dissolve these prejudices, for it alone can conduct to a relative knowledge of the truth; it is an admirable school in which to learn tolerance, humility, and patience; it teaches us to recognize the fact that we often are deceived, and also that we deceive ourselves."

Discussions here followed considering the need of all classes to be enlightened by scientific truth. M. Bérenger objected to this view as follows:

We do not deny the educational power of the scientific spirit; we grant all that has been said, but we must take care not to use simply a dissolvent, for humanity is not nourished with acids alone; we must provide other food to satisfy the cravings of the appetite for the absolute, which forever torments the mind of man. The scien-

tific spirit is a fine school without doubt for intellectual patience, and on this account it has its place in social education; but society does not live simply by the virtue of patience; they need other springs of action—enthusiasm, heroism, in fact, an ideal; and these sacred springs are not the results of the scientific spirit, for it alone does not possess the entire truth; there are many ways which lead to the infinite. Before the blue horizon of the sea, is not the heart which is dilated with wonder worth as much as the brain which analyzes its component parts? It is dangerous to encourage only in a people the tendency of doubt, even though the doubting be well reasoned, for there will be a return toward superstition to demand of it what science has refused—faith, exaltation, right of thought and of action. Do not subdivide the human soul; if you want to tear from it prejudice and fanaticism, open to it a world so large, so beautiful, and so stirring that it will be consoled and freed from its ancient phantoms.

The question now became divided between the partisans of the scientific spirit and those of “la Haute Culture integrale.” Mr. Stanley, of the school board of London, agreed with M. Bérenger that the scientific point of view, exclusively considered, was insufficient, but he felt, on the other hand, that university extension ought not to have any moral aim, but simply an intellectual one. It should not undertake either to conquer a people or to preach to it a faith, but to offer to it “*rafraichissements intellectuels*” and “*une discipline critique.*” M. Rosenthal, on the other hand, affirmed that the university extension should be a permanent moral means of communication between the university and the people. M. Croiset spoke again, saying that while the scientific spirit was not the whole of life, and there remained about it, as it were, an immense unknown sea, still it is none the less true that it is necessary to give to all intellectual and moral life scientific culture. The rôle of university extension is not preaching, but teaching, for the latter penetrates more deeply into the conscience than the former. Let us give to the human mind hygienic habits, for this is the best means for promoting peace and the true progress of society.

M. Crouzet, professor of rhetoric, from Toulouse, the founder of the popular university in that city, spoke on the other side (answered to this), that a people has greater need of moral principles than of scientific criticisms; that it is more sensitive to art than to “*methodologié.*” This idea was also supported by M. Brunhes, professor of University of Frebourg, who showed that the very existence of the popular university proved the reality of this view, which evidently enlisted the support of the younger generation of the professors of secondary education, while the savants and the masters of superior education held by preference to the scientific spirit. The debate had assumed proportions entirely unforeseen, but the hour for voting having come, two resolutions were presented as follows:

1. The international congresses of superior and secondary education, united in session, resolve that the university extension assume for its essential characteristic the development of the scientific spirit in the different classes of society.

2. International congresses, etc., resolve that university extension has for its object to spread abroad "*la Haute culture humaine*" in all classes of society by bringing educators and people together.

This first resolution was adopted. Minor questions were discussed, and the meeting, which will remain the most memorable of the two congresses, adjourned.

The subject of interscholastic correspondence received careful attention, and was well sustained by Miss Lawrence, secretary of the Review of Reviews, who explained its great efficacy in England, and said that on account of the very great favor with which it had been received, Mr. Stead, director of the Review of Reviews, would continue to sustain it as heretofore. The number of correspondents shows 1,000 American students, as compared with 11,000 English. The congress expressed its entire approval of its efficacy.

"In what measure, in what sense, and by what means is it desirable to develop the personality of the pupils and their power of action?" This subject was treated in a most interesting manner, the argument under discussion being to develop in pupils, however varied their gifts, those faculties of body and soul which should make them capable of associating together, and of forming a complement to each other in such a way as to make one harmonious whole.

These faculties are of a physical, intellectual, and moral nature. The question of athletic sports was first considered and their importance recognized; mention was made of the fact that France had been slow to see the great advantage to be gained, but the rapporteur encouraged this form of exercise, if practiced judiciously.

The development of the intelligence was next considered and the following means recommended: (1) To draw and fix the attention by making the pupils take part in the class work by means of constant questioning; (2) to avoid uniformity in manner of treating pupils; (3) to make the pupil understand the real blessing of work; (4) to stimulate his honor and ambition; (5) to insist upon a feeling of responsibility.

The necessity of cordial relations between the pupil and teacher, which shall include sympathy, friendship, and gratitude, was then dwelt upon; also the manner of arousing the conscience, and the following means were recommended: (1) That the sentiment of duty should be inculcated by obedience, but that the pupil should obey not because he must but because he wishes; (2) there should be no distinction made between the so-called important tasks and the lesser ones; (3) sentiment of personal responsibility should be cultivated, horror of deception and of falsehood in any form should be inculcated, habits of right thinking and feeling are necessary in education, and the moral law, of which the conscience is the natural expression, should come to the aid of the teacher in cultivating the will of the pupil.

The manner of developing the mind was next dwelt upon; in fact, the



whole address was of a most elevated character. The following questions were seriously considered: (1) What is meant by personality? (2) to how great a degree do physical exercises contribute to its development? (3) how shall the intelligence in the elementary classes be stimulated? (4) is it true that teaching is often not elementary enough in the lowest grades? (5) what is the rôle of memory in the development of the intellectual faculty? (6) how and why is it necessary to avoid uniformity in the manner of developing different minds? (7) by what means may a class be rendered full of life? (8) how may children be made to love work? (9) is it right to stimulate their ambition? (10) does the cultivation of the mind include moral development? (11) can the school develop the deepest powers of the child? (12) is a family spirit possible in our establishments? (13) should discipline be liberal or authoritative? (14) what should be the nature of punishments and rewards? (15) in what sense should the conscience dominate the activity of the body, of the intelligence, and of the heart? (16) in what should obedience consist? (17) why is a distinction between greater and lesser tasks dangerous? (18) what is responsibility, and is it well to insist upon it? (19) how may responsibility be made to include union of effort? (20) to what extent should association among pupils be encouraged? (21) should religion be used as an aid in the development of the conscience? (22) how may the voice be developed? (23) how may effort and energy be stimulated? (24) in what does "the initiative" consist; why are so many mistakes made in developing it, and how can this evil be remedied?

Mr. Croiset led the debate which followed, pointing to the fact that it was necessary to distinguish between the two leading points: *L'initiative intellectuelle* (development of the mind) and *l'initiative morale* (development of the character). In this discussion, among the many interesting points presented, M. Bérenger and M. Claustre said that in France the programmes were too varied and full. They confused and deadened the mind instead of guiding and interesting it; furthermore, that the teachers were too numerous. Not only are there ten professors for every class, but education is distinguished from instruction, or rather education is not enough to develop the whole nature, because while the professor teaches and the *repetiteur* controls, neither one is in a position to really take all responsibility. To develop the initiative of pupils there is as great a need as there is need in primary instruction of one master—"an educator"—who shall have the time and means of awakening the personality of the child. There should thus be a fusion of the primary and secondary schools, a culmination to be earnestly desired.

This question was discussed. Mr. Stanley insisted on the importance of athletic sports to develop freedom and spontaneity. Mme. Chalamet proposed the introduction of manual training in secondary educa-

tion, and Mr. Fabian Ware, director of the British section, explained that it was universal in England. Miss Wheeler made a plea that the teaching of drawing should be added as one of the greatest means of developing the initiative of the pupil, since the cultivation of the visual intelligence was lacking in our secondary schools and universities. She suggested, however, that as this matter was to be considered to great length at the congress of drawing, it might be unnecessary to have it enter into the resolutions adopted.

M. Croiset at the final sitting introduced the minister of public instruction, with the following explanation of the congress:

We have seen swords crossed in our sittings by a social idealism, brilliant, young, and adventurous, and a pedagogical realism, spiritual, incisive, and prudent. It is unnecessary to mention the names of those who have represented the two tendencies. You are all familiar with them; they have confronted each other loyally and courteously. This international congress, marked by the marriage of the ideal with experience, of youth with mature age, of the right of to-morrow with the fact of to-day, is a definite step toward the international unification of different educational institutions throughout the entire world, toward social fraternity for which younger generations will be indebted to us, since we have offered them the possibility of it.

M. Leagues closed the congress by a reference to the great movement in education toward commercial and industrial ends, and begged all educators to remember in the midst of modern tendencies to place at the head those "humanities" inherited from the antique world which have in them the sources of eternal youth. He thanked the delegates of the foreign nations for their presence and promised the congress to aid to the extent of his ability in the realization and carrying out of their resolutions. His improvised speech was received with great applause, and after he retired Mr. Stanley, representative for the foreign delegates, spoke with great charm, thanking the bureau of the congress for the great courtesy that had been extended to them. The same fraternal sentiments were expressed a few days before at the banquet, where the members of the two congresses had been united.

A general feeling of brotherly love and of cooperation, which had drawn together people from all parts of the world, impressed itself upon all present. Different types of ideals of secondary education had been confronted; every question had had both a humanitarian and a social character. At every sitting the problems presented were treated from the practical and the theoretic side, and the results obtained will lead to the creation of greater international cooperation, by means of which a programme of coordinate, practical, urgent reform shall be presented to the ministry and parliaments of different countries. The way is prepared for considering in the future a unified national education and the great subject of coeducation. The sight of this assembly was very imposing, where the socialist could discuss freely with the conservative, the freethinker with the Catholic, where America, Asia, and Europe compared their experiences, where men and

women collaborated on an equal footing. M. Béranger, representing always the spirit of progress, constantly dissented from the conservative, dignified, scholarly, classic M. Cloiset, who proved himself to be worthy of the great honor conferred upon him. To him, as president of the congress, as his reverend teacher, M. Béranger, the young publicist, paid constant tribute in his summary of the congress which appeared in the *University Review*. He said:

This first and beautiful suggestion of that future society, of that young international humanity, which will repeat, perhaps, one day that always fresh sentiment taught M. Croiset by the lips of Antigone, "I am born not for a mutual hate, but for a mutual love."

REPORT ON THE CONGRESS OF HIGHER EDUCATION.

By ALCÉE FORTIER,

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A separate congress for the consideration of questions touching higher education was organized for the Exposition of 1900. In 1889 a single congress was made to include both higher and secondary education, but the work proved too extensive and too complex for one body to handle it thoroughly or satisfactorily, therefore this innovation. The committee of organization of the new congress had Dr. Brouardel for its president and Professor Larnaudé for its secretary. There were separate sections to discuss methods of teaching questions of technical interest to instructors in law, political and social economy, geographical sciences, history, philology, philosophy, and associate sciences. In the general sessions of this congress the following subjects were discussed:

1. University extension in various countries.
2. The training of teachers by universities for the higher, secondary, and primary schools.
3. The cooperation of universities in training those who are chosen for practical careers in commerce, industry, agriculture, and the colonies.
4. Institutions for securing students' life in common (students' clubs, associations, etc.).
5. Relations of universities and professors with those of other countries; institutions for facilitating such relations.
6. Combination of work of faculties of law and letters to bring about complete instruction in political economy, diplomacy, etc.

The international congress of superior or higher education held a preliminary meeting at the Sorbonne on July 29. There the sections were organized and invitations were given to a "soiree de gala" at the opera. The invitations were issued in the name of the minister of public instruction and Mme. Leygues, his wife, and the representation itself was admirable. Both the actors of the *Theatre Français* and those of the opera appeared in comedies and in grand opera, so

that the guests of "Monsieur le Ministre" might see the principal French artists. The congress was formally opened on July 30 by an address by the president, Dr. Brouardel, dean of the medical faculty. He said that the savant must no longer be absorbed in his cabinet; that his isolation is equivalent to inferiority, and that he needs the cooperation of his fellowmen. Congresses of learned men are therefore of the greatest importance.

M. Greard, rector of the University of Paris, and M. Liard, director of superior education, were present, and during the week a number of the most distinguished men in France in the educational world took part in the congress, such as M. Croiset, the celebrated Greek scholar, dean of the faculty of arts; M. Glasson, dean of the law faculty; M. Breal, of the College de France, and M. Monod, the well-known historian, all members of the French Institute. Among the Americans present were: President Gilman and Prof. A. M. Elliott, of Johns Hopkins University; Professor Cohn, of Columbia University, New York; Miss Thomas, president of Bryn Mawr College, and President King, of Cornell College, Iowa.

There were general meetings and meetings of sections, and they were all interesting and instructive. I joined the philology section, and, after hearing the reports of the work done in different countries, I was glad to see that our American universities can compare favorably with the best European universities. In a special line of work—university extension—we have done as much work as England herself, where the movement originated. The question of university extension was considered one of the most important by the congress, and thoroughly discussed. Sir Richard Jebb, the distinguished English scholar, read a valuable paper on the subject, and papers were read also by professors from Prague, Oviedo, Marseille, London, Lille, Liege, from Roumania, from Poland, and many other countries. The gentlemen from Poland told us that the Polish language was forbidden in Russian and Austrian Poland, and the teaching of it punished.

University extension was highly approved, and its purpose was declared to be "the effort to make the scientific spirit penetrate into all the classes of society." Higher education must always have a scientific method and inculcate a scientific spirit, and, as a professor from England said, "its aim should be to give to all persons intellectual patience." As reports were asked from all countries, I told the congress what Tulane University had done in the past for university extension by its reading circles and its public lectures, and what it is doing now by its courses for teachers. I called attention, also, to the admirable work done in the United States by our numberless chautauquas.

Some other questions discussed were as follows: "The part to be taken by the universities in agricultural, industrial, commercial, and colonial education;" "The formation by the universities of teachers

for higher, secondary, and primary education;" "The relations between universities of different countries;" "The relations between the faculties of law, of medicine, of science, and of arts." The last question gave rise to a long discussion, some of the gentlemen claiming that it would be better to abolish the different faculties and have a single body, where specialties might be studied. It was said that a historian should be enabled to study law, and a lawyer history; that is to say, that there should not be a line of demarcation too rigid between the faculties for higher education. The congress declared that "while respecting the autonomy of the various faculties, there should be a narrower coordination and penetration between them." During the discussion the dean of the law school said that there were in Paris 4,500 law students, of whom 1,500 were amateur students.

The question of the relations between professors of foreign universities was considered highly important, and it was decided to establish a central office where information concerning professors of higher education could be obtained. All facilities should also be given to students who desire to study in foreign countries, and in this respect I may say that France has lately opened wide the doors of her institutions for higher education to students from all countries, and especially from America. It is to be hoped that a number of young American scholars will take advantage of the opportunities offered them in France. Thus far higher education in the United States has been influenced principally by the German universities. The result has been scholarship, deep and accurate, but somewhat too dry. The appreciation of the beautiful, of the artistic, of literature in its high-highest sense has been somewhat lacking, and that, I believe, can be obtained at the French universities without sacrificing true scholarship. For those who are not able to attend the regular sessions of the universities there are excellent summer schools in Paris, at Nancy, in Lorraine, and at Grenoble, in Dauphine.

The history and geography section recommended that the teaching of history be at the same time analytical and synthetic; that historical studies be organized so as to facilitate the acquirement of the legal, economical, geographical, and philological knowledge which students need for the comprehension of historical phenomena. The philology section recommended a comparative study of the ancient languages and more careful attention to the history of the languages. With regard to the modern languages the section laid great stress on the necessity of organizing, in a methodical manner, courses where the teaching would be historical, philological, and practical. The professors of history and of the history of art should be considered indispensable auxiliaries of the professors of Romance languages and of Germanic languages.

We had not only distinguished professors from all parts of the civilized world at our congress of higher and superior education, but

also two statesmen, who were among the most useful members—M. Coulon, vice-president of the council of state, and M. Legrand, his colleague. The congress was closed on August 4 by the minister of public instruction, M. Georges Leygues, who delivered a highly polished and interesting address. Before him Dr. Brouardel, the chairman, had called attention to the fact that at the very place where an international congress was being held had stood the College of the Four Nations, founded for the purpose of teaching foreign languages. The congress decided to meet again in three or four years, and appointed a committee to choose the date and place of meeting. As for the congress of comparative history, one of the most pleasant features of the congress of higher education was the acquaintances formed. The bond of union was so great that it brought together intimately Spain and America. One of my best friends at the congress was Señor José Maria Castilla, a charming gentleman from Oviedo. I may add, however, that I never chose as subjects of conversation Manila, Porto Rico, and Santiago.

CONGRESS OF POPULAR EDUCATION.

During the last half century the nondenominational and lay societies for popular instruction, due exclusively to private initiative, have been greatly multiplied in France and elsewhere. The considerable place they occupy in the instruction and education of the people secured for them a special congress, under the patronage of the French Government, in the Exposition of 1900. The congress was held during the four days, from the 10th to the 13th of September, in the Palais des Congrès of the Exposition. It was designed to aid in securing explanations of the methods which are used and in combining the separate efforts which are made. Thus it interested not only existing societies for the instruction of adults, but also all professors and teachers who bestow singly their devotedness and science on the work of popular instruction and education.

The congress was divided into five sections:

1. Courses for adults.
2. Lectures and sight teaching.
3. Professional instruction (agricultural, industrial, and commercial)—employers' and workmen's unions and corporations.
4. Fine art teaching.
5. Societies or clubs for purposes of instruction and education.

CONGRESS OF SOCIAL EDUCATION.

The education of citizens in their social rights and duties had not hitherto formed the subject of a congress; but it was believed that the importance of such a question would be more than sufficient to warrant

the appeal for an international conference among all those who devote themselves to the study of the social conditions of modern democracy. The exposition authorities accepted the general plan of such a congress, which was held under the patronage of the French Government. The preliminary appeal to the public was as follows:

From the political and social discussions which have agitated minds since the middle of the nineteenth century a clear line of thought has resulted, in which those holding the most diverse opinions agree; it is the idea of a social bond existing among individuals and of their mutual responsibility in the acts of society.

Hence it is necessary to decide, both with a view to conformity with experimental science and also to satisfy the idea of justice, what conditions of association are to be established voluntarily among all men. This is not only for the definition of political rights and duties, but also and especially to define the rights and duties which concern the material and moral life of individuals, the legal institution of the family, the organization of labor, or, in sum, the definition of social rights and duties.

To introduce this new idea into minds—in a word, to give the education of the social sense to humanity—is the task imposed henceforward on those who seek peaceful solutions of the social problem.

The investigation of the means to this end is the object of the study which we propose. According to the programme already published by the group charged with questions of social education the first thing to be done is to clearly ascertain the present state of ideas on this subject, and then to fix on the method to be followed in order to secure this education to every individual. The group is undertaking a special exhibition, to furnish the greatest possible amount of information concerning these questions. To complete its action and prepare future work we have also undertaken to gather together in a special congress, at the Exposition of 1900, all those who are able, in any degree whatsoever, to cooperate in the work of social education. We ask their help for the preliminary studies, for the congress itself, and for the propaganda which should follow.

In order that social education should be rational it is first of all necessary that special studies should establish its method, which is so far little known and ill defined. Method demands observation—the verification of facts, for a clear understanding of them, for in this way their existence becomes known. Then we must learn the principles on which the facts depend and the laws which govern them. In this way we come to know their philosophy. Finally, we must examine the practical consequences which they bring along with them, and thus complete the necessary theoretical knowledge.

When once the method has been established the work of educators will consist in spreading it by keeping in practice to the ideas which have been gained, with the same forward movement and order which have served to gain them.

Social education will accordingly be accomplished by bringing individuals to the knowledge of social facts, so that the idea may become clear in their minds; by starting up in their consciences the feeling which brings forth action conformable to the ideal adopted; and, finally, by strengthening idea and feeling enough through action constantly practiced so as to come to the complete constitution of what may be called the social sense—that is, to action which has become unconscious through acquired habit.

This process will form the necessary practical means for making complete education possible later on. Education is really acquired only when individuals by sufficient study have come to have a clear idea of what is true; and such an idea is then sufficient to decide their choice and action. But in the present state of average knowledge it is necessary, by immediate practical activity forming new habits and environment, to bring about further progress through which full knowledge of social truths shall be acquired by all the individuals who make up society.

To obtain such a result it is useful to divide our studies according to three different degrees—

1. Questions of general method calculated to establish the theory of solidarity.
2. Means of diffusion and propagation for securing the education of individuals.
3. Means of application presented by works due to collective activity.

For this reason we have adopted these three divisions in our programme—theoretical ideas, means of diffusion and teaching, and works for their application.

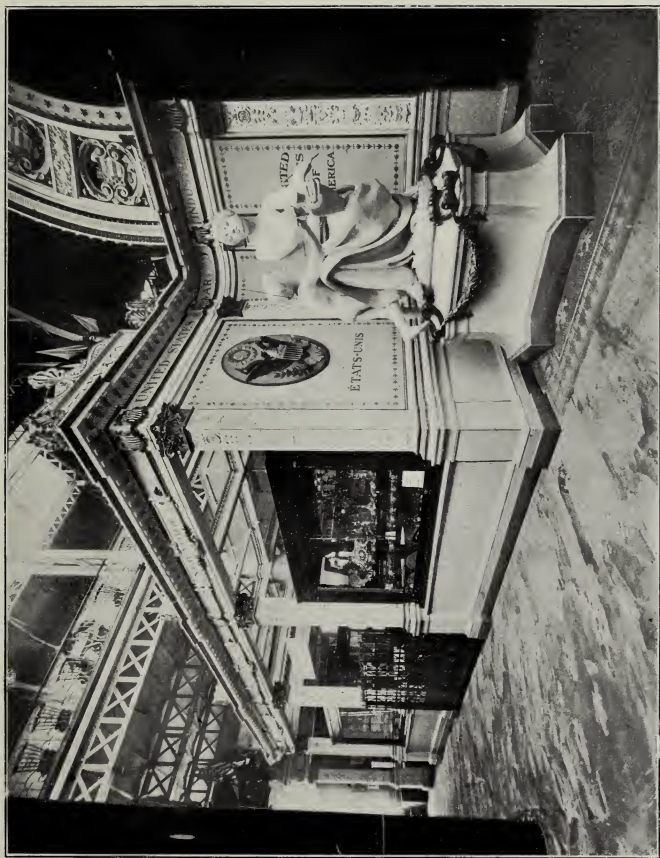
PROGRAMME.

I.—General method, objective method of social facts.

1. Statement of facts of mutual solidarity:
 - (a) Phenomena of independence:
 - In nature (family, heredity, epidemics, climates, etc.).
 - In history (groups of races, of classes, native places, patries, opinions, according to exterior conditions).
 - (b) Analogous social phenomena:
 - Facts on hygiene (public health, disease, infirmities due to work injudiciously distributed, assistance, etc.).
 - Facts on economy (production, consumption, strikes, public works, etc.).
2. Theoretical and philosophical study of social solidarity:
 - (a) Foundation of the word solidarity, its nature, limits, connection with the idea of liberty and justice.
 - (b) General laws governing the intercourse of social beings; consecutive sanctions.
3. Consequences of the law of solidarity applied to the social intercourse of individuals.
 - (a) Differences of appreciation and opinion according to individualists and solidarists. Advantages of solidary action, individual interests are in accordance and opposite; necessary substitution of the idea of solidary struggle of men for life against exterior obstacles to the idea of individual struggle for life amongst men.
 - (b) Influence of social education upon organic arrangements of nature; need of this education to reach the "right" allowed according to the principle of justice.

II.—Social practical education.

1. Diffusion of the ideas of solidarity, theoretical and objective teaching:
 - (a) Exercises, reading, intended to explain the acts of solidarity, the principles ruling them, and the laws resulting therefrom.
 - (b) Application to correct facts of life at school, in the family, in the usual residence.
2. Development of social sentiment:
 - (a) Practical action in accordance to the principles of solidarity; organization of temporary groups having a special purpose.
 - (b) Demonstration of solidary action in the groups; encouragement of private initiative to the acknowledgment of capacities revealed by circumstances, etc.
3. Exercise of social faculties:
 - (a) Organization of groups of children and men for all cases in which solidary actions may be efficacious.
 - (b) Creation of gatherings where individuals may act in a social interest, practice the exchange of services, solidarity between the strong and the weak, learn the mechanisms of collective action, acquire administrative experience, knowledge of capacities, voluntary acceptance of the opinion of the large number; in one word, all that contributes to the intelligent organization of free individual initiative.



VIEW OF NORTH FAÇADE, LOOKING EAST, VARIED INDUSTRIES SECTION, GROUPS XII AND XIV, ESPLANADE DES INVALIDES.

- (c) Practice of the principles of solidarity on all points touching social life where private initiative may be exerted, education of the least learned by the most instructed, solidarity in the family, in the regiment at work, in production, in consumption, in assistance, etc.

III.—*Practical applications.*

1. General characters of collective works:
 - (a) Spreading information on the subject, special conditions.
 - (b) Work of charities, difference with works of solidarity.
2. Examination of works actually existing, progress obtained:
 - (a) Works purely of practice (assistance, orphan asylums, canteens, dispensaries, etc.).
 - (b) Works of practical education (association of scholars and senior scholars, mutual benefit society, syndicates, federations, cooperations, etc.).
 - (c) Theoretical works on spreading information, lectures, libraries, papers, reviews.
3. Conditions to adopt in order to improve and complete the action of collective works:
 - (a) Conditions relating to the foundation and administration of the works.
 - (b) Nature of the progress to be accomplished by the initiative of citizens.
 - (c) Works to be founded in order to complete the ensemble of collective works fit for social education.

CONGRESS OF THE EDUCATIONAL PRESS.

The congress of the educational press was open to all persons who write on matters connected with education, not only in the special educational press, but also in reviews or periodicals of every kind, as well as in the daily newspapers. It was organized by the French association of members of the educational press, which was founded as an experiment some years ago and already performs a useful work in the country. The committee of this association was composed of one section representing the Paris daily press, of another from the periodical press dealing with the higher, secondary, and primary education, and of a third made up from the press of the departments.

The work of the congress was divided under the following heads:

Office of the educational press in all countries; its means of action on public opinion and authorities.

Organization of an international bureau of information concerning questions of education and instruction.

Action of the educational press on popular education (supplementary instruction of adults).

Relations to be established by means of the educational press between the different grades of teaching.

Means to be employed for associating families in the work of instruction and education.

Development of moral and material solidarity among the members of the educational press.

REPORT ON THE CONGRESS OF ELECTRO-THERAPEUTICS.

By Dr. R. G. BROWN, *United States Delegate*.

AMERICANS PRESENT.

Dr. Lucy Hall-Brown and myself were the only Americans present.

A BRIEF SYNOPSIS OF PRINCIPAL ADDRESSES.

“Physiological and therapeutic action of ozone,” by Dr. Labbe, of Paris. He said ozone is an allotropic state of oxygen. Its formula is O_3 . It is oxygen three times condensed. Its polarity is negative. Ozone is used therapeutically in anæmia, chlorosis, bronchitis, asthma, and is a new factor in treatment of tuberculosis. For tubercular cases the air is charged with ozone every hour. The oxyhemoglobin of the blood is modified. Ozone must be pure. The dose does not exceed one-tenth milligram to the liter, repeated several times daily before eating. Ozone augments red corpuscles and lessens white ones. Oxyhemoglobin is also augmented. Urea is increased, etc.

“Therapeutic value of X-rays in medicine,” Eduard Schiff, of Vienna. He advocates use of X-rays for severe skin affections when affected in deeper layers of the cutis. Lupus vulgaris yielded favorable results. The method is to place the X-rays tube 10 inches from the skin. Anticathode exactly opposite irradiated field. Sitzings, five to twenty minutes daily. Lead mask is used to cover parts not to be treated. Seventeen to twenty-five sittings necessary. When skin shows pink or brown color and hair becomes loose then irradiation of part must be stopped.

“Electrodes,” by Dr. Lucy Hall-Brown, of Brooklyn, N. Y. Exhibited several sizes of electrodes for surface application. They are made of aluminum, with numerous perforations and amadou quilted between linen mesh. Amadou, or punk, holds an enormous quantity of water and is very pliable—qualities very essential.

“Treatment of fibroid,” by A. Moutier, of Paris. He first charges a condenser of small capacity and then utilizes the discharge. The condenser is charged about one hundred times per minute, and the discharge current is controlled by means of rheostat.

WHAT NEW DEPARTURES OR METHODS WERE ADVOCATED.

After declaring the congress opened, the president said that he did not intend to preside during the session, but would select six of the delegates of foreign Governments to preside—one for each day, in his place. I had the honor of presiding over this congress during the day of July 31.

RESOLUTIONS ADOPTED FOR INTERNATIONAL ORGANIZATION.

This congress decided to hold an international meeting in 1902 at Bern, Switzerland.

CONGRESS OF FENCING.

The international congress of fencing was held at Paris, June 8 to 11. There were no official American delegates present, as a keen interest in this subject is confined almost exclusively to the Latin countries. England was represented by several experts in saber practice, and a number of Italian swordsmen were present. The chief aim of the congress was to compare and discuss the methods of different countries, and arrive at as nearly perfect a manual of arms as possible. Exhibitions of skill were given in connection with the work of the congress and the experts of various schools were pitted against each other, and their comparative value tested. The president of the society was the well-known M. H. de Villeneuve, president of the Society for the Encouragement of Fencing. The work of the congress was divided into five main sections, the discussion following the order here given:

1. Various methods of fencing; a unification of methods.
2. Fencing in and out of doors. Should the same weapon be used in fencing and dueling?
3. The rôle of the saber; considered as a weapon for exercise and a weapon of combat.
4. Professional questions; the recruiting of civilian and military teachers.
5. The union of fencing societies; constitution of an international fencing committee to arrange international tournaments; unifications of regulations.

CONGRESS OF FINE ARTS.

The congress of fine arts met on the 9th of July, at the National School of Beaux Arts, in Paris, under the direction of the minister of public instruction and fine arts. The sessions of the congress were continued until July 12, when the congress adjourned. A large number of art societies took part in the organization of this congress, but the two bodies especially active in its formation were the Society of French Artists and the National Society of Fine Arts. The aim of the congress was to bring together painters of all nations and to discuss practical methods of establishing a demand and market for their work. Among the active workers of this congress were many of the most noted painters of France: Bonnat, Detaille, Laurens, Carolus-Duran, Cazin, Constant, and Bouguereau.

The discussion followed substantially the lines suggested in the programme:

1. Expositions, national and international; comparative recognition of foreign artists in France and French artists abroad.

2. National and international competitions conducted by the Government, by cities, societies, and committees in France and elsewhere.

3. Materials and industrial products employed in the arts.

4. The advantage, from an artistic point of view, in reproducing works of art by other than mechanical means.

5. Project of publishing a practical manual for the use of artists.

6. Study of national and international legislation relative to the ownership of works of art, artist's rights, etc.

7. Associations of artists in different countries and the relationship between them; history and status of existing associations; advantages their members secure at expositions, competitions, and exhibits; project of an international association of painters.

At a full meeting of the congress July 11, 1900, the floor was given to Mr. William A. Coffin, at his request, to make some remarks on the duty in the United States tariff on foreign works of art.

He gave some account of the organization of the National Free Art League with 1,200 members to combat the duty and of the visits of its delegates or representatives to Washington. He stated also that in the Mills bill in the House the duty was entirely removed, but the Mills bill never became law.

The McKinley bill in the House placed no duty on foreign works of art. The Senate bill at the same session put on a duty of 30 per cent. Result: Compromise in conference, cutting the duty in half and placing it at 15 per cent.

Subsequently, National Free Art League succeeded in getting the duty removed altogether. After a short period of this régime came the Dingley bill, which placed on a duty again of 20 per cent. This is the duty to-day.

Regarding international copyright Mr. Coffin said efforts would be made to more adequately protect the rights of artists in the reproduction of their works. He believed these matters were now covered by special arrangements under reciprocity treaties.

Mr. St. Gaudens, the other official delegate, was prevented by sudden illness from attending the meetings of the congress.

The following speech was delivered in French at the full meeting of the international congress of fine arts, held in Paris on July 10, 1900, by William A. Coffin, the official delegate of the United States. Mr. Coffin was named first among the foreign vice-presidents of the congress.

MR. PRESIDENT AND GENTLEMEN: We feel honored, my colleague Mr. St. Gaudens and myself, to have an opportunity in this distinguished gathering to speak for our fellow citizens the artists of the United States.

In the first place I wish to congratulate the honorable French Government and the administration of fine arts as well as your various artistic societies on your very happy idea of bringing together here in the *École des Beaux-Arts* your officers and delegates as well as the delegates from foreign countries, here in Paris, the great capital of all the arts, the capital of this beautiful country, France, which presents throughout its length and breadth so many admirable things for study and for the pleasure and satisfaction of all those who are interested in art. It is not only this grand universal

Exposition, which offers for our contemplation so many works of the highest value, and we are proud to have brought our portion in an ensemble which is so beautiful and so worthy, it is also Paris with its monuments, Paris by itself, which always presents a spectacle which warms all artists' hearts, it is in fact France, always grand and strong, which is for us always beautiful France. [Applause.]

It is here indeed, gentlemen, that we come as artists to grow young again, and we associate ourselves with hearty sympathy in the work you are undertaking, convinced that it can not fail to have profitable results for us all.

Before saying a few words about the conditions surrounding art questions in the United States, questions which interest you especially at this time in this international art congress, I should like before this distinguished assembly to bear testimony to the gratitude we American painters, sculptors, and architects feel to the French masters to whom we owe so much. It is you who have shown us the straight path. Thanks to the gospel preached in the schools of Paris, we continue to walk at home in this right road and we invite you to observe our progress, to note that our works from our home country, while conforming to your good traditions, take on, more and more from year to year, more individuality. It is only in the matters of art, gentlemen, by the factor of personal temperament that the work of the true artist arrives at genuine distinction. But we learned here in France, many of us, the great secret, the value of drawing, to draw and draw and always to draw, and then to begin again to draw. [General marks of approval and applause.]

Ingres, Gleyre, Cabanel, Lehmann, Boulanger—these names are cherished by us as you cherish them. "Mon bon maître" (to use the words of Jacques Tournebroche in Anatole France's masterpiece "*La Rôtisserie de la Reine Pedanque*")—mon bon maître M. Bonnat, honored by all, M. Gérôme, M. Bouguereau, M. Tony Robert-Fleury, M. Jules Lefebvre, M. Yvon, M. Cormon, M. Carolus-Duran—these are the men who presided at our debuts; these are the men to whom we bring to-day our recognition.

The American school is a young school. This is true, but it is true only by comparison. In colonial times, even before the war for independence, before the memorable years made famous by Washington and Lafayette, we had in our country quite a number of painters. The first was John Smybert, a Scotchman, painter of portraits, and others of note belong to this period. After them come Copley, a young American who studied in London and who produced some beautiful works; Gilbert Stuart, the two Peales, Washington Allston, all having studied at the Royal Academy, London, and Sir Benjamin West, who was its president. In those days our artists went to Rome also to study. We have now in New York and elsewhere veterans in art whom we do not fail to honor who pursued their studies in early days at Rome or at Düsseldorf.

But Healy and Rossiter came to Paris between, I think, 1830 and 1840. After our civil war, 1861-1865, the procession which still continues had its real commencement. In 1876-1878 we behold these young painters, together with their comrades from Munich, coming back to the United States. There was a genuine sensation when their works were shown in the New York exhibitions. The Society of American Artists was founded. The breath of pure art spread over the country and new schools for painting and drawing were established, while the old ones overhauled their courses of instruction. The pupils of the French masters became in their turn the masters of the young aspirants in the career of art. All over the United States there was a movement which we often allude to as our Renaissance. You see, gentlemen, that whether in the war of 1776 or in the peaceful struggles of 1876 France is found at the side of America. [Applause.]

To-day, gentlemen, we have our American Academy at Rome, in the Villa dell' Aurora, with prizes for painting, sculpture, and architecture. This is, as is the case with all art foundations with us, the product of private enterprise, for we have not

as yet a department of fine arts in our National Government, though we hope that we shall have one in time.

It is much to be regretted that we could not send to the Exposition some specimens of our "mural painting," because at least a score of our best painters have devoted themselves for the past six or eight years to this field of art. I mention this here simply to state to you that our artists at present are busy in every branch of the fine arts, as they are here, and we have been able to show this year in Paris certain works of monumental sculpture which form part of the same general movement in art in our country which may be called "public art." At the same time, it is, I think, proper to mention here the name of Mr. Winslow Homer, one of our most celebrated painters, for the reason that he is one of a rather large number among us who have developed their art by themselves, and to declare that our native soil is in itself favorable for a purely native art. [Applause.]

In conclusion, gentlemen, I again salute the art of the French, and I hope that our mutual efforts will bear material results at the same time that our cooperation will aid to preserve the good and beautiful traditions of art, and that inasmuch as "union makes force" we shall be under better conditions to work for the good cause and beat back all that presents itself in the name of art, but which in all countries puts on the same mask—pretension without merit.

I wish success to all art that is sound and beautiful in every country in the world. [Applause.]

CONGRESS ON FOLKLORE.

As the principal function of a congress on folklore is to bring together and compare documents, the work of organizing this congress began by outlining a general programme of questions to be submitted. It was recognized that since the first congress, held in 1889, masses of new material had been collected, especially in Central Africa and in various other savage or uncivilized countries. So it was thought that the time had come to gather together and compare these materials of various origins and to draw from them general conclusions. The idea of the organizing committee was that the congress should devote itself to synthetic and comparative work rather than to analytic and documentary investigation. It was to such general studies or to those which have an international character that the full sessions were given. The special meetings were divided between two sections:

I.—*Oral literature and popular art.*

(a) Origin, evolution, and transmission of tales and legends. Exposition and discussion of the various systems which are now advocated.

(b) Origin, evolution, and transmission of popular songs, both from the point of view of poetry and that of music. Reciprocal influence of learned poetry and music and popular poetry and music.

The popular theater: its relations, ancient and modern, with the literary theater.

(c) Origin and evolution of traditional iconography (pictures, sculptures, etc.); its relations with classical art; mutual borrowing.

(d) Origin and evolution of popular costume. Investigation, in monuments and documents, of the parts of costume which have been preserved more or less completely up to our own day. Origin and evolution of jewels and ornaments.

II.—*Traditional ethnography.*

(a) Survival of customs connected with birth, marriage, death. (Marriage by capture, "bundling," funeral offerings, etc.)

(b) Survival of animal worship in the customs of modern peoples. Survival of the worship of stones, trees, and fountains.

(c) Traces of ancient local cults in the devotions to saints. Popular hagiography (rites and traditions).

(d) Popular medicine and magic (amulets, rites for preservation, laying spells, fascination, and the evil eye, etc.).

General survey of the folklorist movement from 1889 to 1900.

THE CONGRESS OF FORESTRY.

The congress of forestry met in Paris on the 4th of June, adjourning June 7. The congress discussed chiefly the relations of forestry with the water supply. The programme of discussion was as follows:

SEC. I.—*Economical forestry.*

1. Treatment of pine forests—transformation of sickly growth of the mountain regions into pine forests.

2. Agricultural and physiological consequences of clearing.

3. Usefulness of plowing and digging in tree culture.

4. Treatment of underbrush with a view to enlarging the supply of marketable lumber.

5. The deficit or surplus of wood production in various countries; study of imports and exports of timber and their fluxations.

6. Legislation in mountain countries.

7. International forest legislation; general examinations from the forester's point of view of exotic species, acclimated and naturalized.

8. Experiment stations; bureaus of information; utility; programmes and results.

SEC. II.—*Influence of forest in maintaining the soil and regulating the rainfall.*

1. Meteorological forestry.

2. Influence of forest on the subterranean waters in flat countries.

3. Reclaiming mountain lands and controlling mountain streams.

4. Work of protection against avalanches and defensive measures to protect land-owners in the lowlands from the ravages of floods caused by glaciers.

5. Regulations of pasturage, etc.

6. Defense against the erosion of the ocean.

7. Place and value of waste land for wooding.

8. Protection against forest fires.

SEC. III.—*Application of horticultural sciences.*

1. Natural unification of cubic measure for lumber.

2. Comparative advantages for wood and iron—durability, resistance, preservation.

3. Use of the waste matter; making of alcohol; paper manufacture.

4. Forest soil; botanical forestry; indemnity for loss in shipping.

The meetings of the congress were presided over by M. Jean Dupuy, minister of agriculture. Among the resolutions passed were the following:

1. To establish an international agreement to secure the protection of forests and perpetuate lumber industries.
2. To reduce freight on shipping young trees.
3. To establish new stations for investigations in forestry.
4. To take up the work of rewooding to control the water courses.
5. To secure government aid in the prevention of avalanches, and to organize a bureau for glacier observation.
6. To urge government measures against forest fires.
7. To establish an international bureau to control public investigations on the subject of forestry.

By a vote of 61 to 50 the congress decided to declare itself permanent and to unite with the congress of agriculture, of which it should become a section. The next congress will meet in Italy. The city has not yet been selected.

REPORT ON THE INTERNATIONAL GAS CONGRESS.

By ARTHUR G. GLASGOW.

Chairman of the United States Delegation.

The congress assembled at 9 a. m., September 3, 1900, in the Palais des Congrès of the Paris Exposition under the presidency of M. Théodore Vautier, president of the Société Technique de l'Industrie du Gaz en France, and its technical deliberations were concluded on September 5, at 6 p. m.

The American delegation numbered nine:

George G. Ramsdell, official delegate of the United States Government, president of the American Gaslight Association; representing also the Western Gas Association.

William McDonald, official delegate of the United States Government, president of the Western Gas Association.

Arthur G. Glasgow, chairman official delegates of the United States Government; also representing the American Gaslight Association.

F. H. Shelton, representing the American and the Western Gaslight associations.

James Ferrier, representing the American and the Western Gaslight associations.

J. B. Grimwood, secretary Pacific Coast Gas Association.

O. N. Guldlin, representing the Western Gas Association.

J. S. Reeves.

J. Arnold Norcross.

The representatives of England and Germany numbered about 50 each; Belgium, Holland, and Switzerland furnished about a score each; Austria and Italy about half that number, with a small contingent from various other nations; and a preponderating number of French engineers—members of the "Société Technique du Gaz en France."

Twenty-nine papers were presented, in the order indicated in the accompanying list, of which those by American authors were:

5. "The measurement of high temperatures," by Alten S. Miller, New York.
14. "The reduction of the cost of distribution by the use of high pressures," by Frederick H. Shelton, Philadelphia.
15. "In what manner can the normal loss of gas in distribution be most largely diminished?" by P. H. Gibbons, Philadelphia.
21. "The history, character, and results of the educational work carried on by the trustees gas educational fund," by Alfred E. Forstall, New York.

The trend of the papers and discussions coincided with modern lines of thought and progress in America, and indicated the increased application of inclined retort settings; mechanical handling of gas works' materials; gas for heating and power, especially for driving electric machinery by gas engines; incandescent gas lighting, especially the intensification of light and incandescent mantles by means of high gas pressure; prepayment meters; carburetted water gas, which is of interest owing to the large quantity of American oil consumed in its manufacture in Europe.

The papers and abstracts of the discussions have already been published in the various gas journals, and a complete official report of the proceedings will be issued by the congress.

It is to be regretted that the polyglot character of the congress necessarily restrained discussion of the papers, and perhaps prevented the breadth of treatment that might otherwise have been expected in an international assembly. The congress, however, brought the experience of the various countries to a common focus, and thus provided a valuable indorsement of present American views and endeavor.

To this report is appended an abstract of the paper on "The reduction of the cost of distribution by the use of high pressures," read before the congress by Mr. Frederick H. Shelton of Philadelphia:

THE REDUCTION OF THE COST OF DISTRIBUTION BY THE USE OF HIGH PRESSURES.

[By Mr. Frederick H. Shelton.]

For many years gas engineers have been steadily reducing both operating and the investment costs necessary in the manufacturing department of the gas business. The increased yield and efficiency of benches, the improvement of water-gas apparatus over early forms, the utilization of residuals, the use of oxide of iron and the increasing use of mechanical conveyers and devices have all, with other progressive steps, as is well known, resulted in recent years in greatly decreasing the cost of making gas. But if inquiry is made as to what material reduction of necessary investment or what advance has been made in the department of distribution it is difficult to point out anything very different from or notably better than the practice of twenty or even more years ago. Substantially the same cast-iron pipes, the same meters, the same equipments in general, and the same low ranges of pressures are in use to-day as were used years ago. Improvement in distribution practice seems to have been limited to details, such as an increased use of governors for the reduction of leakage, a greater tendency to coat wrought-iron mains and service pipes as a safeguard against corrosion, and a growing use of cement joints instead of lead, hitherto usually used with a

cast-iron pipe. While it is a compliment to the efficiency of standard gas distribution appliances that the inventive minds of many years have been unable to bring forth better forms, it is none the less a fact that because of the continuation of settled forms and of a lack of improvement the cost of our distribution systems is to-day, for given volumes of business to be handled, practically as great as ever.

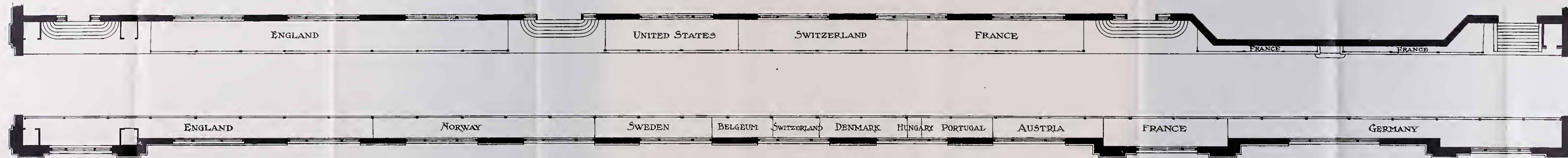
In the United States the average prices at which gas is sold is for various reasons generally decreasing, making it imperative that the cost of gas plants or any portion of them be kept down to the least possible amount. Lowering prices and the growing use of gas for fuel are resulting in the handling of larger volumes of gas than heretofore, and the increasing difficulty of laying large, new mains for increased volumes in streets of the principal cities already well filled with water pipes, sewers, underground conduits of various descriptions and surface railway tracks is well recognized. The consolidation of manufacture at central stations is also necessitating larger mains, and the recent rise of the price of iron pipe is making such more expensive than ever. All of these conditions afford the greatest opportunity for some improvement in methods of distribution, and any practical plan that will in particular decrease the size and cost of street pipes will be a great progressive step.

Perhaps the most striking feature in the present practice of gas distribution is the extremely low pressure at which gas is delivered—average pressures of 2 to 6 inches water pressure, equaling but a tenth or a fifth of one pound steam pressure. If customary pressures could be increased so that pipes of given size would deliver 10 to 15 times the volume of gas now handled, would it not enormously cheapen the costs of distributing systems?

I have given this matter much thought for upward of two years past, and some time ago reached the conclusion that illuminating gas could just as well as not be distributed satisfactorily at a number of pounds pressure—say from 10 to 30—instead of at but a small fraction of one pound, and that by such plan of working either present pipes could be made to handle several times the quantity of gas now delivered, or else that much smaller pipes would serve as well.

On the basis that quadrupling the pressure doubles the flow, other conditions being the same, 27.75 inches water pressure or 1 pound steam pressure would double the flow of gas delivered at a pressure of 6 to 7 inches, a not uncommon distributing pressure. And if this 1 pound be quadrupled and the pressure be increased until 20 or 30 pounds be reached, such pressure would deliver ten or twelve times the amount of gas now sent through given-sized pipes. While such pressure is enormous, compared with usual illuminating gas pressures, it is very moderate indeed if viewed from the standpoint of, say, steam or water pressures, and if by the simple increase of pressure, by some practical working plan, the capacity of gas pipes can be so greatly increased, does it not follow that the construction costs of distributing systems may be very greatly decreased, reducing the earning power necessary and thus, indirectly, the expense of distribution? Appreciation of the saving that may be made may be shown by a few examples.

According to the formula of Pole, used in such matters, an 8-inch pipe 4 miles long, under present customary pressures of 6 or 8 inches, will deliver at the far end 8,000 to 9,500 cubic feet of gas per hour. Under a range of 20 to 30 pounds pressure and operating, as later described, by well-accepted formulæ for the flow of gas of 650 gravity in such range of pressure, it could deliver 140,000 cubic feet per hour. A 2-inch pipe 1,000 yards long would deliver 650 to 750 cubic feet compared with 4,600. A 12-inch pipe 2 miles long would deliver 33,000 to 38,000 cubic feet compared with 550,000 cubic feet. To supply gas to a point $4\frac{1}{2}$ miles distant, at the rate of 10,000 feet per hour, on present lines, in a recent instance figured upon, would have required a 10-inch pipe, costing about \$26,000. With high pressure, however, a 3-inch pipe, costing about \$10,000, gives equal capacity. To supply 15,000 feet an hour at a point 6 miles distant, in another instance, required a 12-inch main at a cost



PARIS EXPOSITION OF 1900.
 PLAN OF INSTALLATION OF SPACE FOR THE POLLOCK PRIZE
 IN PALACE OF MERCHANT MARINE.
 CLASS 33

0 5 10 15 20
 Scale of Feet



of \$40,000, while with high pressure, as hereafter described, a main of but 4 inches diameter would have given the same capacity at a cost of \$16,000.

I have recently had occasion to figure upon the construction of a distributing system, including 25 miles of pipe in the usual amounts of sizes from 3 to 12 inches in diameter, the estimated cost of which was \$82,000. The construction cost of a high-pressure system in the same locality, with pipes ranging from 1½ to 4 inches in size, and including the extra costs of pumping equipment and consumers' house regulators, etc., was about \$43,000, a saving of about 47 per cent.

Illuminating gas, it should be remembered, is the only extensively handled commercial fluid that is delivered at a very low pressure. Water, steam, compressed air, natural gas, Pintsch gas, refrigerating fluids, etc., have been and are being widely distributed, sold or handled for years in public places in various of the principal cities of the civilized world, and to such extent and in so many ways as to fully justify the statement that a number of pounds pressure in itself in such matters is neither unsafe nor unfeasible. The mechanism and appliances for controlling these various fluids, even at pressures up to several hundreds of pounds, have been well worked out into adequate and standard forms that fully serve the purpose of commercial industries. It is indeed curious, when one reflects upon it, that for so many years illuminating gas has continued to be distributed at but a small fraction of a pound pressure when all other liquids served by public companies are sent out usually at far greater pressures, and the universal tendency in such things is to increased tension. The reason for the continuance of low pressure with illuminating gas is, no doubt, the fact that relatively, and in the past before the advent of any great volume of fuel business, the actual quantities of gas required to be handled have been small, and it has been found comparatively easy to provide pipes of sufficient size and without undue cost that would convey all the gas required. While such conditions have existed in the past, it is a question whether in the near future, for the reasons already stated, gas engineers will not find it both necessary and profitable to replace pipe diameter, convenient but expensive, with readily supplied pressure to best distribute large volumes.

While some companies in the United States have slightly increased their pressures to increase the carrying capacity of their street mains by the introduction of mechanical appliances, such as rotary blowers, to reinforce the pressure given by the gas holders, it has almost invariably been solely for the purpose of transmitting gas from one distributing point to another and within pressures not exceeding 50 inches, and measured in inches of water pressure, and no general delivery of gas to the customer direct and through all the mains at some pounds pressure has been undertaken, to my knowledge. The only instances, among the 1,000 companies in the United States, of which I have been able to learn, wherein gas is being noticeably compressed in connection with public supply or service are as follows:

In Louisville, Ky., coal gas has been pumped for about two and a half years by a piston compressor of about 30 by 36 inches cylinder size, at the rate of about 140,000 cubic feet per hour, through a 10-inch wrought iron pipe, a distance of some 2¾ miles, for the purpose of filling outlying gas holders, throwing a pressure of 10 inches. In this case no consumers are served along the line; no loss of candlepower has been observed. The initial pressure of 5 to 7 pounds is only that sufficient to overcome the friction of the pipe while filling the holder against 10-inch pressure at the rate per hour designated.

In Oakland, Cal., for about ten years a mixed coal and water gas has been pumped by a piston compressor a distance of 8 miles to Alameda, through an 8-inch cast-iron pipe with lead joints; also for the purpose of filling a gas holder at an outlying point. In this instance the initial pressure carried is 5 pounds; the terminal-holder pressure is 4 inches. No individual consumers are taken off the line, although midway a governor of the Connelly type controls a supply of gas taken from the main for the

district of East Oakland. The loss of candlepower observed, due to compression, etc., is said to be slight and not to exceed a quarter of a candle.

In Chicago, Ill., for some years water gas has been pumped in the southern portion of the city from the plant of the Mutual Company's works, a distance of about 23,000 feet, through an 8-inch pipe line, for the purpose of filling an outlying holder. In this instance a rotary exhauster of the Root pattern is used, giving an initial pressure of 10 pounds and passing gas at the rate of about 60,000 feet per hour into the holder against a pressure of $7\frac{1}{2}$ inches. No consumers are taken off en route.

In Danbury, Conn., for ten years past a 35-candlepower oil-water gas has been pumped under 40 pounds pressure through a 2-inch wrought-iron pipe by a piston compressor, a distance of 3 miles, into stationary wrought-iron tanks. From these tanks the gas, controlled by suitable governor, is supplied to the small town of Bethel at customary low pressure. No consumers are taken off en route, and no loss of candlepower is observed.

The above cases are far short of the distribution of gas direct to the customer of high pressure, but are yet of interest in showing that compressing illuminating gas to several pounds pressure causes no noticeable loss of candlepower.

The well-known Pintsch system of car lighting, so extensively used in both the United States and Europe for very many years, has, moreover, fully demonstrated that pumping machinery for compressing gas to almost any pressure can be dependably used in gas undertakings if desired.

If, therefore, the compression of illuminating gases to a few pounds pressure does not objectionably reduce their power, as indicated in the Louisville, Chicago, Oakland, and Danbury instances cited, and if compressors will readily pump gas, as shown by the Pintsch system, and if wrought-iron pipes and mechanical regulators will suitably convey, handle, and control it, as shown by natural-gas undertakings, does it not necessarily and logically follow that by using the compressors of the Pintsch people and the wrought-iron pipes and regulators of the natural-gas people illuminating gas can also be similarly compressed and delivered at high pressure through small pipes if desired.

There is but one answer to this question: Illuminating gas can be so served, easily, dependably, safely, and economically, although the realization of this is but dawning.

Considering the above general proposition in more detail, it is clear that the satisfactory distribution of gas direct from the gas works to consumers at some pounds pressure in order that they may be safely and well served through mains much smaller than the ordinary would specifically require—

1. Street mains of long life, with joints originally made and that will stay tight.
2. Machinery for compressing and pumping, in which the likelihood of breaking down is remote.
3. Regulating main governors, reliable in character, for reducing the pressure of the high-pressure line to any desired low (ordinary) pressure in any given district.
4. Individual house governors, reliable in character, to enable the supply of customers anywhere along the high-pressure line.
5. Adequate safety appliances, so that in the possible event of any pressure-regulating mechanism failing to work no damage can result other than the loss of gas.
6. Means for safely and easily putting in additional service pipes at any time on the high-pressure pipes while under pressure, without shutting off the supply to existing customers.
7. Freedom from loss of candlepower to any serious extent because of the compression.

Without consuming time unnecessarily by the relation of the detail of extended investigation, I became and am convinced—

First. That for high-pressure gas work, wrought-iron screw pipe, well coated against corrosion and carefully laid, will afford a practical tight system of gas mains, and will

last in most situations sufficiently well. The experience of ten to fifteen years of the natural-gas companies, and others in the United States, with the wrought-iron pipe gives warrant for this conclusion.

Second. That the standard types of air compressors, built to withstand severe usage in distant mining districts, are, with slight modifications, entirely suitable for pumping gas at some pounds pressure, are practically free from and are no more liable to breakdowns than are ordinary steam engines, and can be installed in duplicate at such moderate cost as to completely cover the fullest requirements of safety and insurance of supply.

The thousands of air compressors in use throughout the world, as well as the many Pintsch compressing stations, give full warrant for this conclusion.

Third. That the district governors and regulators used for years in the natural-gas fields of the United States will control any volume of illuminating gas from and to any range of given and desired pressure, and are so moderate in cost, simple in form, and so compact as to enable their ready arrangement in duplicate, giving ample opportunity for inspection, cleaning, adjustment, etc.

The very extended and satisfactory experience with such regulators by natural-gas companies gives warrant for this assumption.

Fourth. That the expensive individual house governors, also used throughout the gas districts with great reliance and satisfaction, will equally well serve with illuminating gas. These governors are practically the same in type as those used in the Pintsch system of car lighting in about 100,000 cars throughout the world, and for many years with an almost entire absence of accident or trouble.

Fifth. That the use of simple forms of oil seals, or safety vents, will fully protect as desired either a district at large or one or more individual customers from danger or damage in the remote, though possible, event of a defective pressure-regulating device working improperly. Such precaution is used in the natural-gas fields, and is believed and has so far been found to give entire protection.

Sixth. That by the use of a saddle, or lug, bolted on to the gas main, and a suitable pressure-tapping device, service pipes can be easily added as desired without inserting a T, interrupting the supply of gas, or increased expense, and with less danger and trouble than is involved in the present practice.

Seventh. That where high compression to, say, 200 pounds, would seriously affect the candlepower of the gas, compression to but 20 or 30 pounds—provided the gas is an ordinary coal gas or well-made water gas—will not decrease the candlepower visibly, or over the fraction of a candle, or enough to be an objection, commercially.

Having satisfied myself upon each of the points as above, fully and in general, that illuminating gas could with proper equipment be readily distributed at 20 pounds pressure, and, an opportunity offering within the past year, demonstration was made of my belief.

The towns of Phoenixville and Royersford, 28 miles from Philadelphia, are about 5 miles apart, and together contain about 16,000 people. Each of these towns has had a gas company for many years. Both of these companies were purchased last summer by the Consolidated Schuylkill Gas Company, controlled by myself and some associates. It was decided to lay a high-pressure connecting main from one to the other, in order that the operation of the smaller gas plant could be discontinued and all gas making be centered at one point. Between the two stations a 3-inch wrought-iron pipe 23,015 feet in length was laid, special care being taken in the make of the joints and the testing throughout. When finished it was tight under 60 pounds pressure. The pipe was laid about $3\frac{1}{2}$ to 4 feet deep along the line of a moderately hilly country road. It crosses a river 600 feet wide and railroad tracks and stone culverts at various points. Tees were inserted for customer-service pipes along the line, together with drips and valves. At the starting point a compressing pump was installed having a working capacity of about 5,000 cubic feet of

free gas per hour. Suitable governors, gauges, and small parts and details were provided. The duty of the compressor is to draw gas from the gas holder and compress and force it through the pipe line at a pressure of from 10 to 25 pounds, according to requirements, to the town at the other end of the line. At the far end of the line two regulators or governors, set tandem, are used to reduce the varying pressure of several pounds in the pipe line to that desired in the low-pressure existing mains, namely, a uniform 2.7 inches. The first governor is adjusted to reduce any pressure ranging up to 50 pounds, down to 1 pound, and the second governor, more sensitive in its action, is set to reduce the gas at 1 pound to the 2.7 inches named. Both governors are of the nonfreezing, dry-diaphragm type. Suitable gauges for indicating and recording the various high and low pressures, as well as other necessary appurtenances, were provided at the terminal pressure-regulating station.

Construction was finished and operation commenced December 29, 1899, and from that date since the supply to Royersford by this pipe line has been maintained satisfactorily. In the first few weeks some readjustment of the regulating mechanism was from time to time necessary, until its working and best action was fully understood, and the gas pump was operated in various ways in order to ascertain the best method of running. No difficulties whatever of importance developed, and, in fact, there was less trouble and experiment found than was really anticipated or is ordinarily involved in commencing the operation of something out of the ordinary. For the first two months a small gas holder at Royersford was used in connection with the pipe line to insure the safety of supply and until it was felt that the system as a whole was in complete running order. That condition being reached within that period, the gas holder was then shut off, and since that time the town has been served with its illuminating gas direct from the high-pressure main through the regulators from a point nearly 5 miles away and without the use of a holder or storage receptacle. It is my understanding that this is the first instance of this being done. The gas served is an ordinary illuminating water gas of about 20 to 22 candlepower, made from naphtha. The generating apparatus is an old one of the Lowe type and of inferior design, the superheating capacity being much less than it should be, with the result that the gas made is but partially "fixed." Under these conditions it would be expected that the compression would result in considerably reducing the candlepower by the throwing down of the unfixed illuminants. No particular depreciation in candlepower, however, has been observed, the gas at the far end of the line being, generally speaking, of good commercial quality and of practically the same grade as that delivered at the starting point. While variations in candlepower have been noticed, they are due to irregularity of the quality of gas made, and because of the poor machine so far necessarily used, and not to the fact of compression.

I regret to say that owing to local and other reasons it has not yet been possible to have made close photometrical observations.

The operation of the system has been so continuously and so generally satisfactory that the owners of the company have decided to duplicate it on a much larger scale in the extension suburban districts of Darby and vicinity, immediately adjoining the city of Philadelphia. Work is under way in the district upon an initial system of about 22 miles of high-pressure pipe. The trunk line from the gas works is 6 inches in size and extends to a point 3 miles distant, and from that point two lines of 3 and 4 inch pipe farther extend respectively to points 7 and 8 miles away from the gas works. It is expected that upward of 1,000 customers will be receiving and using gas from this system within a year's time, and that it will make a still further demonstration of the low investment with which gas can be served at a distance and in a scattered district by means of high pressure. The various towns and villages within the territory in question, which is about 8 miles long to 3 or 4 miles wide, are as yet but thinly built up and are so scattered that it would not have paid to pipe and connect them together or been possible to as yet secure the gas business therein, if it

had been necessary to lay the large and expensive cast-iron mains that the distances would have made necessary on ordinary lines.

The operation of the Phoenixville high-pressure distributing system has further been so satisfactory that the owners also of the River Shore Gas Company, serving gas in several small towns not far from Philadelphia, in the State of New Jersey, are now completing, under my supervision, a pipe line for the purpose of transmitting gas from their works at Riverton to the town of Moorestown, about $4\frac{1}{2}$ miles distant. This equipment is almost identical with that at Phoenixville in the use of a 3-inch, wrought-iron, coated, screw-joint connecting pipe, in the use of governors along the line and at the far end for controlling all pressures, and in the entire absence of the use of any storage holder or receptacle whatever at the far end.

The equipment of high-pressure lines as above, with the accompanying minor parts, either necessary or desirable, may be conveniently divided into three principal parts, as below:

The compressing machinery (in duplicate), including a continuous steam supply, water jacket, speed and pressure governing mechanism, recording pressure gauges, thermometers, low-pressure safety alarms, pulsation and condensing tank, meter.

The pipe line, including the matters of coating, joints, testing, drips, valves, service saddles, house-pressure regulators, high-pressure house meters, individual house safety appliances.

Main-line regulators (in duplicate) and terminal station, including indicating gauges, recording pressure gauges, thermometers, test lights, purge and vent facilities, photometer, safety seals (main line), high and low pressure alarms, by-passes, etc.

Straight-line, steam-driven, water-jacketed, horizontal Rand compressors are used.

A machine having a gas cylinder 8 inches in diameter by 12 inches stroke, operating at 140 revolutions a minute, has a practical working capacity of about 5,000 cubic feet per hour, weighs 2,100 pounds, occupies a floor space of about 2 by 8 feet, and requires 18 horsepower at full load. A machine of about eight times this capacity, or over 1,000,000 feet for twenty-four hours, would have a steam cylinder probably of 16 inches diameter, a gas cylinder of 21 inches, and a stroke of 24 inches; would weigh about 18,000 pounds, occupy a space of about 16 by 4 feet, and at 95 revolutions, with full load, would require a little over 100 horsepower.

PULSATION TANK.

Immediately upon leaving the pump the gas passes into a small tank of about 140 cubic feet capacity, used for the triple purposes of absorbing the pulsation due to the action of the pump, of cooling the gas, after the heat of compression, by radiation, and of affording a convenient point for collecting and withdrawing the drip and condensation resulting from compression. The tanks used by me are of simple cylindrical form, of three-eighths steel, tested to 125 pounds pressure, and measuring 9 feet in length by 55 inches in diameter.

METERS.

The ordinary station meter not being suitable for measuring gas under many pounds pressure, I am at this date installing an appliance extensively used in the natural-gas fields for the measurement of the very large volumes of gas there involved. In order to avoid the great expense and difficulties of constructing meters large enough to measure all the gas passing, a most ingenious arrangement of differential balanced valve is used, inserted in the run of the pipe and styled a "proportional meter." In this a fixed portion, usually 1 per cent, of the passing gas is always diverted through and measured in a small positive meter, connected and accompanying, irrespective of what the volume of gas may be that may at any

time be passing. The index of the meter that measures the 1 per cent also multiplies the result and indicates the total volume of gas that is passing. The writer is informed that these meters are ordinarily and reasonably accurate and reliable.

MAIN-LINE REGULATORS AND GOVERNORS.

For the purpose of reducing pressures from 50 or 100 pounds down to a very few pounds, say five or so, the appliance used in the natural-gas fields is that known as the Fulton regulator.

This is an automatic, vertically moving valve, operated by the action of a diaphragm above, which in turn is actuated by the gas pressure from the low side of the regulator. The action of this mechanism is very perfect and complete. It is made with connections of from 1 to 16 inches, and the smaller sizes occupy but a space of less than 3 feet square.

For the regulation of pressures of a few pounds only, ranging from 2 to 10 or 20 pounds, a form of diagram governor is also commonly used, which reduces such pressures to a few inches water pressure and holds the same very accurately to any point desired.

Immediately beyond the second regulator at Royersford a side connection of spur from the low-pressure main is taken off in the regulator house and led into a small pot or vessel near by containing oil. This pipe seals a few inches in this oil precisely as the dip pipe of a bench seals in the hydraulic main. From the crown of the vessel an open discharge pipe leads through the roof. This oil seal forms a safeguard against the possibility of the high pressure of the pipe line getting into the low-pressure pipes beyond, to the damage of the meters, etc., as, if the regulators should at any time get out of order and fail to work, and the high pressure should get by, it would immediately break the oil seal and vent itself through the standpipe into the atmosphere. This simple provision, it is felt, affords entire safety against serious accidents that could otherwise be possible. The oil used in such seals is of a character that will neither evaporate nor freeze.

SERVICES.

Consumers' service connections on the high-pressure pipes are made by the use of saddles bolted on to the pipe. This saddle is threaded for receiving the connecting fittings, and after being placed in position requires only the boring of a hole through the wrought-iron pipe to give full supply of gas. Special tools are used that entirely prevent the escape of gas in making connections.

HOUSE REGULATORS.

Small sizes of low-pressure main-line regulators are used universally for controlling the pressure in houses along the line of high-pressure mains wherever desired. Those are made in a variety of forms, but nearly always with a cast-iron case of from 5 to 15 inches diameter, standing any ordinary pressure and containing the governing valve and diaphragm. Threaded to fit standard pipe from three-eighths to two inches in size, they are readily connected in the run of any service pipe taken off a high-pressure main and afford a capacity according to size of from 25 to 2,000 feet per hour. As a class they are extremely sensitive, simple, accurate, and reliable in operation.

HIGH-PRESSURE METERS.

While I have so far used the ordinary tin-case meters, following the house regulators as above and protected by safety seals intervening to guard against the possibility of pressure getting by the regulators and into the consumers' meters, it is likely that there will later be used, to a greater or less extent, some of the forms of cast-iron

meters built to withstand 20 or 30 pounds pressure in general use in the natural-gas regions.

The iron case contains a floating inverted bell, divided into chambers and sealed in oil in the lower half. This bell rotates with an undulating motion, the compartments filling and emptying in succession through a central common valve. This form of meter has no leather diaphragms, is made entirely of metal, in sizes of from 200 to 40,000 cubic feet capacity per hour, and in diameters ranging from 1 to 5 feet.

Enough has been said in the foregoing to show that distribution at high pressure is not only a matter of theory, but to some extent at least, is already an accomplished fact as well. The Phoenixville plant since December 29, 1899, has been so operating and distributing gas at many pounds pressure some miles away, through small wrought-iron pipes and without storage holders or tanks, precisely as natural gas is distributed. The two other plants named, before this paper will be publicly read, will also be so operating.

High-pressure distribution has been commenced, and if this beginning (crude and rough compared with the future, but yet effective and satisfactory), and if what I have suggested and described, shall be the means of interesting the attention of the members of the congress and shall lead to the adoption and improvement of the plan by others, and the expansion of "high-pressure" working, with the economy and satisfaction that I am so certain will be found, my gratification will be great.

LIST OF PAPERS.

[Congrès international de l'industrie du gaz, third, fourth, and fifth of September, 1900.]

September 3:

1. "The photometry of incandescent gas," by Dr. H. Bunte, of Carlsruhe.
2. "Draft of conditions and rules to be observed in the photometry of incandescent gas mantles," by MM. Stoecklin, Rieder & Co., of Mulhouse.
3. "Inclined retorts," by Mr. C. E. Brackenbury, of London.
4. "Notes on a retort bench with independent producers at a distance," by M. G. Eichelbrenner, of Paris.
5. "On the measurement of high temperatures," by Mr. Alten S. Miller, of New York.
6. "Thermic reactions during the carbonization of coal—registering of high temperatures—details of experiments," report by M. Euchène, of the Paris Gas Company.
7. "Carburetted water gas: Its use in coal gas works," by M. Henri Sospizio, of Trieste.
8. "Notes on the Dellwik-Fleischer Water Gas System," by H. Dicke, of Frankfort.
9. "Means to be adopted for avoiding naphthaline obstructions," by Dr. J. Bueb, of Dessau.
10. "Production and manufacture of cyanides in gas works," by Dr. J. Bueb, of Dessau.
11. "On the absorption of hydrocyanic acid by illuminating gas as an introduction to the question: What progress has been made in the manufacture of gas in respect of the production, by liquid process, of yellow prussiate of potassium?" by Dr. A. Smits, of Amsterdam.

September 4:

12. "Coal-handling plant," by Mr. F. D. Marshall, of Copenhagen.
13. "Mechanical means of dealing with coke in the works of the Paris Gas Company," report by M. Louvel, of the Paris Gas Company.
14. "Reduction in the cost of distribution by the adoption of high pressures," by Mr. F. H. Shelton, of Philadelphia.
15. "In what way the normal loss of gas in distribution may be reduced to the greatest extent," by Mr. P. H. Gibbons, of Philadelphia.

16. "Statistics of Swiss Gas Works; diagrams and plans of the gas consumption and town of Zurich, 1890-1899; plan of the gas works of Winterthur and Geneva," by La Société Technique Suisse, des Directeurs de Gaz et Eaux.

17. "Gas engines and their gas supply," by M. Aimé Witz, of Lille.

18. "La Lumière Globe," by M. Ernst Salzenberg, of Crefeld.

19. "Suspension and automatic lighting of elevated gas lamps," by M. G. Himmel, of Tübingue.

20. "Examination of the competitive illuminants of gas," by M. A. Lecomte, of Paris.

September 5:

21. "The history, character, and results of the educational fund instituted by the American Gaslight Association for the technical instruction of gas workers," by Mr. Alfred E. Forstall, of New York.

22. "Means of interesting stokers in retort-house work," by M. I. Hedde, of Paris.

23. "Comparison between the usual illuminants by means of diagrams," by M. Ad. Bouvier, of Lyons.

24. "Report on the utility of standardizing the pitch of screws for gas fittings," by M. J. Bengel, of Paris.

25. "Results obtained in Holland with prepayment meters," by M. P. Bolsius, of Bois-le-Duc.

26. "Heating and cooking by gas," by M. A. Levy, of the Paris Gas Company.

27. "Concerning consumers' meters; opening of a discussion on wet and dry meters," by M. Bigeard, of Angers.

28. "Advantages and disadvantages of dry meters," by M. G. Asselbergs, of Bergen-op-Zoom.

29. "Notes on the public lighting arrangements of Guayaquil," by M. Charles Guichard, of Paris.

REPORT OF THE CONGRESS OF ECONOMIC AND COMMERCIAL GEOGRAPHY.

By WALTER D. WILCOX,

United States Delegate.

The Paris Society of Commercial Geography undertook the organizing of a congress of economic and commercial geography under the auspices of the Exposition. The congress met on Monday, August 27, and closed on Friday, August 31.

This congress had for its object all questions which enter into the domain of economic geography—explorations and commercial highways, natural and manufactured products, emigration and colonization, instruction, etc. The congress aimed at bringing up to date all original work on the questions that are more and more occupying the public thought of all countries. The programme followed these general outlines:

EXPLORATIONS AND COMMERCIAL HIGHWAYS.

Recent explorations of commercial interest; their results.

Desirable explorations for the output of new lines of commerce and industry.

Ways and means of communication, either existing or to be created—rivers and canals, roads and railways, land and sea telegraph.

State of merchant marine; installation and furnishing of ports; free ports.

Representation and defense of commercial interests.

Questions.

1. What are the best means of organizing economic and commercial explorations?
2. Change wrought by the nineteenth century in conditions of commerce as a consequence of progress in ways and means of communication.
3. Best conditions for the establishment of a free port.
4. Employment of military hand labor in the construction of ways of communication.

NATURAL AND MANUFACTURED PRODUCTS.

Exportable products of various parts of the globe; importable merchandise.
 Conditions of exchange.
 Customs tariff systems.
 Acclimatation of vegetables and animals; experiment gardens and farms.
 Collection of samples.
 Information offices.

Questions.

1. Means of securing the adaptation of industrial products to the needs of foreign commerce and the habits of various populations.
2. Creation, organization, and outfitting of the markets of raw materials.
3. What is the character and what should be the nature of a museum of samples?

EMIGRATION AND COLONIZATION.

Questions relating to colonization.
 Colonial undertakings; agricultural, commercial, and industrial companies in the colonies.
 Systems of colonizing.
 Acclimatation.
 Manual labor in the colonies.

Questions.

1. What economic régime most favors colonization?
2. Agricultural hand labor in the colonies, especially in petty holdings.

INSTRUCTION.

Spread of economic geography; books, periodical publications, lectures, traveling for study.
 Teaching of economic geography in all grades.
 Commercial and professional schools.
 Commercial museums.

Questions.

1. Best methods of teaching practical and commercial geography.
2. Organization for teaching economical geography outside the schools.

RESOLUTIONS.

Resolutions adopted in the general sessions or the sessions of the sections and definitely adopted by the congress in the solemn session of adjournment on Friday, August 31, 1900, after revision by a commission composed of the officers of the congress and the presidents of the several sections, were as follows:

- I. The congress resolves that railroad companies should organize for travelers and freight an international service, directly and by the shortest routes, between ports and the principal commercial and industrial centers.

II. In view of the fact that a railroad from Lons-le Saunier to Geneva would have the advantage of putting Paris in direct communication with Milan (likewise Calais with Brindisi) over the Simplon by means of a level line, avoiding the altitudes and grades of the existing lines, the congress declares itself in favor of this plan, which would be advantageous to broad international traffic (for travelers and freight).

III. The congress declares that it appears necessary to revise the cable convention of 1884.

IV. The congress resolves to have published separately in every country consular reports which have an interest for international commerce, and under such a classification as to make them cheap and easily obtainable.

V. The congress recognizes as desirable the building up, extension, and improvement of central markets for raw materials.

VI. In view of the great importance to the growth of outside commerce of information bureaus and sample offices, the congress recommends their establishment in the great commercial and manufacturing centers.

VII. The congress declares that the need has arisen for the cutting of a naval interoceanic canal across the American isthmus in the immediate future; a result of the cutting should be the neutralization of the countries traversed.

VIII. The congress thinks that if in every country the colonial administrations should favor and encourage the development of agriculture, it would be perhaps prudent in order to avoid useless and costly experiments to turn over to competent service the care of furnishing advice relative to the choice of the best systems of cultivation to contract for, and to give the technical management of these systems to special agricultural departments.

IX. To assure the agricultural development and prosperity of colonies the congress points out as desirable:

1. An organization of experimental gardens which would permit them to render to colonial agriculture and science all the advantage which could be expected of them.

2. The establishment of frequent reports between the colonial gardens and the scientific centers of the metropolis, reports which are extremely profitable to science and agriculture.

X. The congress resolves that the colonial chambers of commerce of the entire world should, for the extension of their national affairs, put themselves in correspondence with the chamber of commerce of their metropolis.

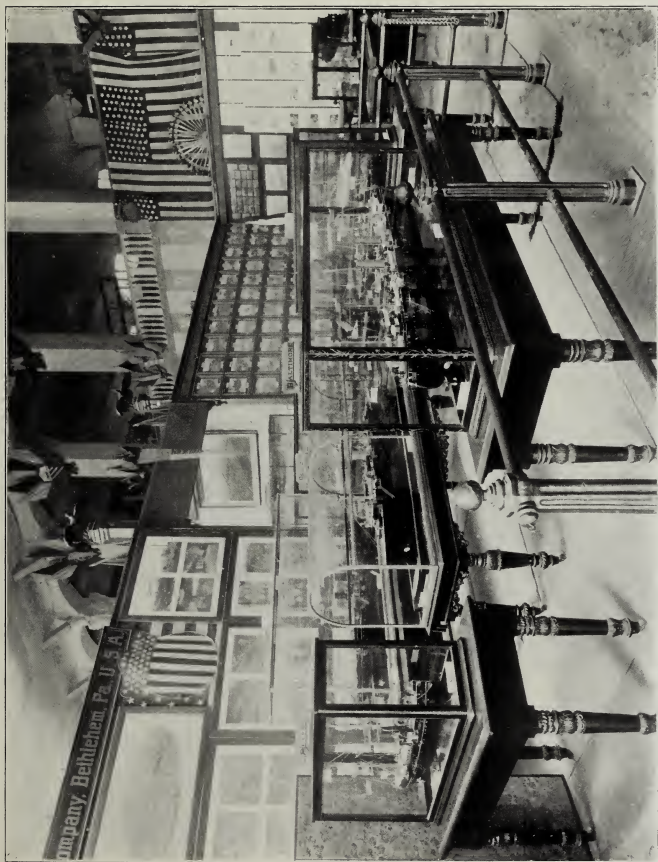
XI. The congress resolves that every country under a protectorate, whatever they may be, should be related to the colonies under the customs revenues, and treated by each protecting nation with the same advantages as the colonies.

XII. The congress resolves that the populating of colonies by military colonials should be encouraged and developed.

XIII. The congress resolves that all exploration should be accompanied by a reconnaissance or topographic map giving all the resources of the country; the character of the country for the establishment of ways of communication; water courses and the power which they can give; groves, forests, nature of the different plants, as well as full information about the zoology, mineralogy, and botany.

XIV. The congress resolves that children born in the colonies of Europeans and native women which shall have been abandoned by the father should receive, through the care of the colony or their respective governments, an education of a practical professional and technical nature which would permit them to become aids to the colonization in the position of overseers, superintendents of agriculture, foremen, etc.

XV. The congress resolves that all countries interested in the question of manual labor in their tropical colonies should organize a close inspection of the engagement,



UNITED STATES NAVAL EXHIBIT, GROUP XVIII, MODELS OF PROTECTED CRUISERS AND GUNBOATS.

transportation, and the hygienic, moral, and physical conditions of such manual labor.

XVI. The congress resolves that, under the auspices of the societies of commercial geography—notably, of the Society of Commercial Geography of Paris, which has already taken upon this subject a happy initiative—very popular books, the information regarding which is found scattered in numerous purely scientific works, ought to be published under the care of competent men, and desires that a series of publications of this sort should be prepared, particularly upon the occasion of future congresses of economic and commercial geography.

XVII. The congress resolves that in the higher schools of commerce the course of instruction should have a large place for all that concerns the routes and methods of transport—notably of naval transport.

XVIII. The congress resolves:

1. Upon the creation or extension of exclusively practical courses of instruction in commerce in the manufacturing and commercial towns.

2. That the scientific associations, the chambers of commerce, and the societies of commercial travelers should take the initiative in the creation of these courses by insisting on the knowledge of living languages.

3. That the societies of commercial geography should form a committee charged with establishing a programme of these courses.

XIX. The congress resolves that the instruction of geography in the universities should be of such a character as to offer assistance to persons not in the universities, and that it should endeavor, especially, to contribute to the scientific development of secretaries and other officers of chambers of commerce.

XX. The congress recommends the application to economic geography of the conclusions of the congress of Berne (1892) and of London (1895) upon the preparation of critical notes from books and periodicals of general geography, in such a manner as may be decided, for each country first, and then for all the countries, and also of special lists for economic geography.

XXI. The congress resolves that instruction in commerce should be given in schools of agriculture.

XXII. In view of the fact that it is necessary to follow out and complete, for the use of adults, knowledge of economic geography, the congress resolves that a vigorous effort should be made in every country for this form of post-graduate instruction.

XXIII. The congress resolves:

1. That instruction in economic geography should take an even larger place in the programmes of education in all grades.

2. That it should take for its foundation the study of physical geography, but of physical geography strictly limited to such actual phenomena as are generally accepted.

3. That in the course of this instruction the exercises and original questions for discussion should replace, as far as possible, the mnemonic preparation of the courses pursued and the copying of printed matter.

XXIV. In view of the fact that agriculture, manufactures, and commerce depend for success as much upon the ease of exchange as upon the certainty of the future—

That this certainty can only be obtained by international agreement and continuity of duty rates;

That the stability of customs which commercial treaties, conventions, *modus vivendi*, etc., give are only a step toward the suppression of all impediments to exchange;

The congress expresses the wish that the obstacles which make hindrances to commercial relations should be done away with among all nations of the world.

REPORT ON THE CONGRESS OF GEOLOGISTS.

By ARNOLD HAGUE, *Geologist.*

The eighth international geological congress convened in Paris in August, 1900, and was one of the many similar conferences gathered together in that city during the International Exposition. The sessions were held at the Palais des Congrès, an imposing building admirably situated within the grounds of the Exposition near by the Place de l'Alma, one of the most convenient gateways to the World's Fair.

There can be no doubt that this congress should rank as one of the most important of the many held in Paris during the year, not only on account of its large membership, but as a representative body of scientific men from all countries interested in international matters. Its membership list carried nearly 1,000 subscribers, over 50 of whom were from the United States, although the attendance of delegates from among the active workers in geology in this country was not as large as had been anticipated. The close relations of the congress to the Exposition are clearly indicated by the time assigned by the committee of organization to the examination of geological, geographical, mineral, and cartographic displays exhibited from all parts of the world where any civilized government exists.

The formal opening of the congress took place on Thursday, August 16, at 4 p. m., under the presidency of M. Leygues, minister of public instruction. M. Karpinsky, president of the seventh session of the congress at St. Petersburg, delivered a graceful address suitable to the occasion, and read a list of officers of the present congress nominated by the council at its business session in the morning. The officers thus proposed were elected by acclamation.

M. Albert Gaudry, member of the institute and professor of paleontology in the Muséum d'Histoire Naturelle, was chosen president. He thereupon delivered his inaugural address, welcoming in most cordial expressions the distinguished body of geologists gathered together for this occasion. He spoke eloquently of the dead who had passed away since the last congress, mentioning a few of the more distinguished names, among them, from the United States, James Hall, eminent in invertebrate paleontology, and O. C. Marsh, in vertebrate paleontology, and proposed that the congress should rise as a body in honor of the memory of our departed friends. He described briefly the four sections into which the congress had been divided for the better discussion of the work to be considered. Mr. Charles Barrois, general secretary of the congress and secretary of the committee of organization, presented a report from the committee in which he defined the proposed work of the congress and explained the elaborate

plans for geological excursions throughout France. Then M. Leygues, on the part of the Government, greeted the foreign geologists to the congress of Paris. A long list of vice-presidents were named, representing nearly all the Governments of the world. From the United States three vice-presidents were chosen: Henry F. Osborne, of Columbia University; J. J. Stevenson, of New York, and Arnold Hague, of the United States Geological Survey. From Canada, Dr. Frank B. Adams, of Montreal, and from Mexico, Dr. José Aguilera, director of the geological survey of Mexico. The four sections of the congress were designated as follows:

- I. Section of general and tectonic geology.
- II. Section of stratigraphy and paleontology.
- III. Section of mineralogy and petrography.
- IV. Section of applied geology and hydrology.

The president of Section I was Sir Archibald Geikie, director-general of the geological survey of Great Britain; Section II, Dr. Karl Zittel, of Munich; Section III, Dr. Ferdinand von Zirkel, of Leipzig; Section IV, Prof. Dr. Schmeisser, director of the geological survey of Prussia. Each section held two sessions, at which a large number of papers and memoirs were presented, several of them causing animated discussions. In every instance the time was too limited for careful consideration, and conferences on subjects referred to them were from necessity set aside with but slight debate.

Section I, general and tectonic geology, met on Friday, August 17, and Thursday, the 23d. At the opening meeting President Geikie delivered an admirable address on "International cooperation in geological investigation." Among the more valuable papers presented were those of Professor Chamberlin, of Chicago, on "Proposed international geologic institute;" Professor Joly, on "The age of the earth, determined by the quantity of sodium in the sea," a second paper on "Experiments in relation to erosion in fresh water and salt water," and a third paper on "The formation of silicates found in igneous rocks;" Munier-Chalmas, on "The Tertiary strata of the Paris basin and the delimitation of the secondary and Tertiary formations;" Stanislaus Meunier, on "The phenomena of subterranean sedimentation;" Raulin, on "Tertiary terranes of the aquitaine, their classification and their fresh-water fauna;" Bleicher, on "Denudation of the Lorraine Plateau."

At their second session the report of the international committee upon glaciers was presented and discussed. Among the more interesting papers presented was that of M. Arckowsky, on "The glacial phenomena in the antarctic regions;" that of Papovici-Hatzeg, who presented a new geological map of Roumania on the scale of 1 to 300,000, and that of the Abbe Parat, on "Geological observations in the caves of la Cure." The only contribution at this meeting from the

United States was an interesting paper by H. F. Reid, on "The movements of glaciers."

Section II, stratigraphy and paleontology.—In this section largely attended sessions were held both on Saturday, August 18, and again on Tuesday, August 21. The report of the international commission on stratigraphical classification was presented by the chairman of the committee, Dr. E. Renevier, professor in the University of Lausanne. The commission was appointed at the congress at St. Petersburg and consisted of eight active members, the United States being represented by Prof. H. S. Williams, of New Haven. An animated discussion followed, several members of the congress taking part in the proceedings, which interested the continental European geologists more than those from other parts of the world. It was an elaborate and painstaking report of 12 pages, which will be published in the *Compte Rendu* of the congress, together with the details of the conference. The papers read here represent a wide range of subjects, including valuable contributions upon the geology of Algeria, by E. Ficheur, accompanied by a new geological map of the region on a scale of 1 to 800,000; Flamand, on "The geology of southern Algeria and the country adjacent to the Sahara Desert;" Douville, on "The geology of Madagascar;" Zeiller, on "The fossil plants of Tonkin;" W. S. Hume, on "The eastern valleys of Sinai;" Grand Eury, "Formation of coal seams in the coal basins of central France," followed by Lamière, on "The transformation of vegetable material into coal," and Malaise, on "The Cambrian and Silurian of Belgium." Three papers from America were presented in this section, one by Prof. W. B. Scott, of Princeton, on "The fauna of Patagonia," and two papers by Prof. H. F. Osborn, on "The progress of the methods of paleontology" and an elaborate one on "The correlation between the Tertiary mammal horizons of Europe and America," which was received with great interest by the congress. Professor Ami, of Canada, presented a memoir on "The succession of paleozoic faunas of Canada."

Section III, mineralogy and petrography.—The principal session of this section was held on Tuesday, August 21. President Zirkel presented, on the part of M. Keilhack, the new review, entitled "Geologisches Centralblatt," and called the attention of the members to its publication. The assembly then proceeded to the election of a president of the committee on petrography, and Professor Zirkel was declared elected. The committee consisted of Becke for Germany and Austria, Barrios for France, Brögger for Scandinavia, Loewinson-Lessing for Russia, and Pirsson, of New Haven, for America. Professor Becke, of the University of Vienna, president of the commission, presented a report of the committee to consider the establishment of an international journal of petrography. Professor Lacroix presented the views adopted by the international commission on petrography at

its meetings in Paris, held the 25th and 26th of October, 1899. This report was quite lengthy and covers the broad field of petrography, and will be published in the final proceedings of the congress. The papers read at this session include one by Sacco, attempting a general classification of rocks, and one by Salomon, presenting a nomenclature for metamorphic contact rocks; others by Weinschenk, on "Dynamometamorphisme et Piézoecristallisation;" Salomon, on "The formation of graphite;" and Sabatini gave an account of recent investigations upon and our present knowledge of the volcanoes of central Italy. From the United States the only paper presented was one by Arnold Hague, on "The volcanic phenomena of the Absaroka Range in Wyoming."

Section IV, applied geology and hydrology.—This section met on August 18 and 23. The communications offered in this section were not so numerous as in some others, but embraced a wide range of subjects and attracted the attention of a large number of delegates. Among the papers of general interest should be mentioned those of Mourlon, director of the geological survey of Belgium, on "New methods of geological work in Belgium;" Gosselet, upon the "Mineralization of deep-seated saline waters," and Fabre, on "The plateaus of the Hautes-Pyrénées and the dunes of Gascogne." In this section the only communication by a delegate from the United States was one on "The progress of the production of precious stones in the United States," a paper which was received with much general interest by European delegates.

On Saturday, August 25, a general session was held by the congress which was devoted to the presentation, discussion, and action upon the reports of the various commissions, and the following reports were presented here: (1) The report of the commission on geological nomenclature, by M. Tschernyschew; (2) the report of the commission on the geological map of Europe, by Capellini; (3) the report of the commission on petrography, by Dr. Zirkel; (4) a report by the commission upon glaciers, by M. Richter, and (5) proposals and suggestions of international cooperation in geological investigation by Sir Archibald Geikie, and the proposals of Professor Oehlert in regard to the nomenclature of new types. This session was unavoidably short, owing to numerous appointments and social engagements of the members of the congress. Early in the afternoon on the following Monday, August 27, the closing session of the congress was held, which called together a large attendance of delegates. Several communications on broad fundamental principles of geology were read or presented by title with a brief abstract of contents. Among those of general interest to all geologists were the contributions of Cayeux on "The radiolaria and sponges of pre-Cambrian Age in Brittany," and an elaborate memoir, accompanied by sections and diagrams,

by Stanislas-Meunier on "The structure of the Diluvium in the Seine Valley." At this session a paper by Charles D. Walcott, Director of the United States Geological Survey, was formally presented to the congress. This communication had been printed and distributed by the general secretary in the early days of the congress, and was most favorably regarded as one of the important contributions offered to the congress. A large part of the session was necessarily occupied with matters relating to the formal closing of the scientific proceedings. The invitation of the Austro-Hungarian Government to the congress to hold its next meeting in Vienna in 1903 was cordially accepted. More or less formal invitations to meet elsewhere after the Vienna congress came from Scandinavia, Japan, and Mexico, but without any definite action being taken upon them. Resolutions of thanks were adopted in recognition of the care and forethought of the officers of the congress and the committee of organization, under the able leadership of M. Charles Barrois, general secretary. The scientific sessions of the congress came to a close with appreciation for all that had been done, and with a feeling that the VIII^e Congrès Géologique International had been most successful.

The geological congress lasted from the 16th of August to the 27th, inclusive, scientific sessions being held on seven days. Five days, including two Sundays, were allotted to charming geological excursions in the neighborhood and to studying classic localities within the Paris basin, or, if members so preferred, they were free to visit the Exposition. No account of the congress should be given without calling attention to the great value of the Exposition to the individual members. Scientific sessions were as a rule limited in duration, and several hours were devoted each day to observing and investigating the marvelous scientific features brought together in Paris from all parts of the world. Not infrequently visits were planned for inspecting the exhibits from different countries, accompanied by those familiar with their geological displays. Every means was employed to make the scientific features of the Exposition known and accessible to the congressistes, and descriptive catalogues of objects of interest were distributed freely to those seeking advice. As an instance of the care with which such matters were arranged, it may be well to mention three documents which were furnished to members: "La cartographie à l'Exposition Universelle," by Emm. de Margerie and Louis Raveneau, a most useful document of 20 pages; "Notice sur les documents géologiques réunis à l'Exposition," by A. Thevenin, an invaluable guide to the geologists, arranged geographically, and although not claiming to be complete, enabling one to see nearly everything in that department; "La géographie physique et la géologie à l'Exposition Universelle de 1900," by G. Ramond, a publication which appeared in two parts—Part I, France, Part II, foreign countries, the latter a

closely printed catalogue of 16 pages—enumerating in detail everything relating to physical geography.

All of the entertainments and receptions given for the congressistes, and all other such meetings in which they were invited to participate, seemed admirably arranged for bringing together in social intercourse the members from distant countries. The importance of these social functions in aiding the purposes of the congress should not be overlooked, and no account of the proceedings would be complete that did not give them proper recognition. On the afternoon of August 19 the President of the Republic and Mme. Loubet gave a lawn fête in the garden of the Élysées, in honor of the awards bestowed by the Exposition authorities. Over 2,000 cards of invitation were issued and a liberal number of them placed at the disposal of the president of the congress for distribution among the foreign members. The entertainment, which was given under the supervision of the director of the Opéra Comique, consisted of a well-selected series of dramatic performances and dances from both the oriental and occidental world gathered together in Paris during the Exposition. Everything that was finest on these lines was represented on two large stages especially erected for the purpose. Invitations to the national theaters were issued on several occasions to foreign officials of the congress.

In the evening of the day that the opening of the congress took place a brilliant reception was given by the Société Géologique de France to the congress in their spacious new rooms, rue Danton, 8, the guests being welcomed in a clever address by the president of the society, M. A. De Lapparent. M. and Mme. Gaudry held an evening reception, attended by a large number of representative geologists from different parts of the world. On Thursday, August 23, Prince Roland Bonaparte, a member of the committee of organization, received the members of both the geological and anthropological congresses, who were invited to examine his interesting ethnological specimens and private library of over 100,000 volumes, containing a large and valuable collection of Americana. The municipal congress of Paris received both congresses together at the Hôtel de Ville, a reception which was greatly enjoyed by all those who found time to attend. The closing social function was a brilliant banquet, given by the committee of organization in the Hôtel de Palais d'Orsay, at which nearly 400 guests partook of an exceptionally well-cooked dinner. Only a few formal after-dinner speeches were made, including those by M. Gaudry, president of the congress, Sir Archibald Geikie for the English speaking guests, Cradner for the Germans, De Lapparent for the French, and Professor Tietz, of Vienna, who spoke for the Government of Austria, where the next congress—three years hence—will assemble.

An admirable feature of the congress was the remarkable series of

excursions arranged for the congressistes. Twenty, more or less, lengthy excursions were carefully planned for the comfort and pleasure of the parties, besides numerous shorter trips in the immediate environs of Paris, of which mention has already been made. These excursions were so cleverly planned that they took one into nearly every nook and corner of France, and were designed to meet the needs of investigators in every branch of geological research. In order that all congressistes might be permitted to take part in one or more of these journeys, and at the same time not to overcrowd any parties traveling in the less frequently visited portions of the Republic, the excursions were divided into three classes. The *Guide Géologique de France*, prepared under the supervision of the committee of organization, is a most useful compendium of French geology, with a presentation of the most recent investigations and opinions of the geologists of France. This somewhat ponderous volume is really made up of twenty separate guidebooks, handsomely illustrated, designed for the different excursions. Of the excursions before the congress special mention might be made of those in Brittany, conducted by the general secretary of the congress, M. Charles Barrois; the one in Ardennes, led by Gosselet; and that in the Hautes-Pyrennees, among the crystalline rocks of the Vallée de l'Orèige and the pic d'Arbizon, with Lacroix, an enthusiastic guide. After the congress came the admirable excursion under the guidance of M. Michel-Lévy, director-general of the geological survey of France, in the neighborhood of the Massif of Mont-Dôme and of the Puy de Dôme, the excursion to the Massif Central with Marcellin Boule and Fabre, and the somewhat longer excursion into the mountainous regions of the Alps of the Dauphiny and Mont Blanc. The last excursion was planned to start on September 23, with a rendezvous in Toulon, and was purposely arranged for so late a date to allow members of other trips to participate. The excursion was confined to the Barre-Provence, and was under the guidance of Marcel Bertrand. The first of these excursions started from Paris August 3, and the last disbanded on the 3d of October at Marseilles.

The memoirs and communications presented to the congress, together with the full proceedings of its sessions, will be published in the *Compte Rendu* of the Eighth Congrès Géologique International, Paris, 1900. It will appear as a large volume, but rich in geological literature.

CONGRESS OF GRAPHOLOGY.

The congress of graphology considered questions under the following topics:

- Characteristic types of the penmanship of Europeans.
- Evolution of types of handwriting.
- Official regulations regarding the caligraphy of public documents.
- The determination of the age of manuscripts.

Means of establishing the authenticity of autographs.

The condition of the large private and public collection of autographs.

Method of classifying such collections.

The history of the development of graphological studies amongst peoples of different countries.

International bibliography of graphology.

The reliability of indications furnished by graphology.

The relation of graphology and psychology.

Modifications produced on penmanship by environment and by suggestion.

Atavism in handwriting.

The extent to which the development of a child's penmanship should suggest the way in which he ought to be educated.

The writing of invalids and of the insane.

A consideration of the theory advanced by some that the sex can be determined by the handwriting.

Utility and social influence of graphology and the means of developing a scientific knowledge of the subject.

GROCERY CONGRESS.

The international grocery congress at Paris held its sessions on the 13th, 14th, and 15th of June. The programme followed by that body was substantially as follows:

1. Classification of the principal questions interesting grocers in all countries.
2. Best method of protecting the retail grocery trade of all nations.
3. Study and comparison of the laws of various countries that affect the grocery trade.
4. Creation of a central board of information for the trade.
5. Study of the laws relating to the adulteration of food staples as enforced in various countries.
6. Relations between employers and employees.
7. Different methods of apprenticeship; situation of employees; societies of mutual-ity, aid, etc.
8. Legislation in different countries on accidents to goods in shipping and possible amelioration. Report on the present status of the small tradesmen, and his future, from an economic point of view, in the presence of trusts, syndicates, etc.
9. Study of the various methods of purchasing, payment, etc., as practiced in different countries.
10. Cost of transportation and the freight tariffs of various countries, taking the tariff schedule and the nature of the goods shipped as a basis.

REPORT ON THE CONGRESS OF COMPARATIVE HISTORY

By ALCÉE FORTIER.

Professor of Romance Languages at the Tulane University of Louisiana.

A universal exposition—a world's fair—brings together not only the products of the mind and of the industry of men, but men themselves, from all countries and of all trades and professions. Congresses are therefore held at all expositions to enable men of the same profession to meet and to exchange ideas. I know of nothing more instructive

than to learn from people of different nationalities what work they do and how they accomplish it. Of course there are marked differences of opinion between a Bulgarian and an Englishman; but it is interesting to note that men of culture, educated men, have many ideas in common and strive to attain the highest civilization by means very similar, whatever be their native land.

A very large number of congresses are being held in Paris during the time of the Exposition, and I had the good fortune to take part in the congress of comparative history. I had the honor to be appointed official delegate of the United States to that congress and to that of folklore, and met many distinguished men, delegates from other countries, representatives of learned societies, and savants from all parts of the civilized world. I was especially interested, however, in meeting a number of great French writers, whose works I had either read or studied.

The congress of comparative history was one of immense scope, since it was concerned with almost every historical aspect of modern civilization. To cover the extensive field of investigation laid out for this congress it was necessary to conduct the work in both general and sectional meetings. The sections were eight in number:

1. General and diplomatic history.
2. Comparative history of law and institutions.
3. Comparative history of social economy.
4. Comparative history of religions.
5. Comparative history of sciences.
6. Comparative history of literature.
7. Comparative history of the fine arts.
8. Comparative history of music.

The officers of these sections were chiefly Frenchmen, and were men of universal repute in the departments over which they presided. Of the section of general and diplomatic history, M. Henry Houssaye was honorary president; of the department of institutions and law, M. Glasson, dean of the law faculty of the University of Paris; of the social-economy section, M. Levasseur, of the Académie des Sciences Morales; of the section of religious history, M. Anatole Leroy-Beaulieu, of the Académie des Sciences Morales; of the literary section, M. Gaston Paris, the celebrated critic and a member of the Academy, was honorary president, while Ferdinand Brunetière, well known in the United States through his lectures delivered at Johns Hopkins University, was honorary president, and Victorien Sardou, the dramatist, was one of the vice-presidents; of the fine-arts section, M. Guillaume, director of the French Academy at Rome, was president; and of the musical section no less a person than Camille Saint-Saëns himself.

The congress was opened at the celebrated Collège de France on July 23 at 10 o'clock, by M. Gaston Boissier, perpetual secretary of the French Academy. He is the author of works on Roman life and

Roman history, noted not only for learning, but also for the charm of the style. It seems as if M. Boissier had lived in the closest intimacy with Cicero, with Cæsar, with Titus, with all the great men of ancient Rome, and the address which he delivered at the opening of our congress was a masterpiece of grace and eloquence, of "finesse," as the French say. M. Boissier is 80 years of age, but he is not the oldest member of the French Academy. M. Legouve, whom I saw, is 93 years of age. He has written, in collaboration with Labiche, amusing and witty comedies which have been widely read by the students in our colleges.

M. Boissier spoke in the morning, and at 2 o'clock M. Ferdinand Brunetiere, editor of the *Revue des Deux Mondes* and member of the French Academy, gave us a lecture on "European literature; definition, method, and programme." M. Brunetiere is a little dogmatic, but he is a man of vast erudition and an agreeable speaker. I may note here that French lecturers remain seated while speaking, and seem to converse with the audience. Before them is a waiter with a decanter of water, two glasses with spoons, and lumps of sugar, the whole more from tradition than for actual use.

I attended generally the section of literature, but also that of history. I had the pleasure of being introduced to M. Gaston Paris, probably the greatest romance scholar in Europe, whose works I have been studying and teaching for a number of years. M. Paris was the honorary president of the literary section, and gave us a most interesting address. He spoke of the origin of poetry, and principally of the origin of folklore tales, and laid stress on the great importance of a comparative study of literature. M. Brunetiere was the president of the section, and told me that he had heard of the good work which we are doing in Louisiana for the preservation of the French language. M. Gustave Lanson was the secretary of the section; he is the author of the best short history of French literature, if we can call short a work of nearly 1,200 pages.

The section of literary history met in that magnificent building, the new Sorbonne, at the Richelieu Amphitheater. The great cardinal is buried in the church of the old Sorbonne, and it is proper that the remains of the founder of the French Academy should be in a place consecrated to literature and to science. It is impossible to give an account of all the papers read in the literary section. There were several which dealt with the influence of French literature on those of other nations; for instance, on Portugal, on Sweden, and on Armenia. The latter paper was highly interesting, and we were all deeply moved when the speaker said that the seats of learning in his country had been destroyed, the country devastated, and men forced to flee from it to save their lives. He added that he hoped that soon Armenia would again be prosperous and happy, and we extended to him our heartfelt sympathy.

There were papers on "The comic in the old French drama," on "The origin of the Breton cycle," on "The dialect of Luxemburg," and I had the pleasure to call attention to the interesting French literature of Louisiana. Most of the papers were read in French, but a most curious sight was that of an Athenian reading a paper in German. It was a compliment to the German language, but it seemed to me a curious anachronism, and on that day German was Greek to me. The cosmopolitan features of the congress were, as I have said, most interesting, and during the excursions and social functions I happened to be oftenest in the company of a Japanese, a Bulgarian, a Swiss, and a French "protonotaire and archipretre" of the cathedral of Moulins.

The congress of comparative history held a general and final meeting of all the sections on July 28. I called the attention of my colleagues to the centennial of the Louisiana purchase, to the proposed celebration at New Orleans, and to the exposition at St. Louis, and invited them to meet in the United States in 1903. I said that the international congress might be held at St. Louis, but that all the members of the congress should first visit New Orleans. My remarks were very graciously received, and after adjournment one of the gentlemen said to me that he presumed that a wealthy country like the United States would place a vessel at the disposal of the members of the congress for the voyage across the Atlantic.

REPORT ON THE CONGRESS OF THE HISTORY OF RELIGIONS.

By PAUL CARUS, *Editor of the "Open Court."*

The congresses held at Paris during the exhibition of 1900 were, or ought to have been, in many respects interesting to Americans, and I will point out here only the most obtrusive features.

The formal organization of the Paris congresses, as contrasted with the informal meetings of 1889, was obviously an imitation of the World's Congress Auxiliary, instituted at the time of the World's Fair held in Chicago in 1893. As such the Paris congresses were intended to be cosmopolitan in their character, and efforts were made to make them of world-wide interest. The fact that they were practically a repetition of the congresses of Chicago was recognized only in a limited degree, or at least passed over in silence.

In spite of the obvious similarity between the Paris and the Chicago congresses there was a decided contrast in the methods that were applied in America and in France. The managers of the Chicago congresses were rather generous in their invitations, and enrolled large numbers of honorary and corresponding members at home as well as abroad. They did so even at the risk of cheapening the honor that naturally attaches to such courtesies. Further, they attempted to



MAIN ENTRANCE, LIBERAL ARTS FAÇADE, GROUP III, CHAMP DE MARS.



make the several meetings useful to the public at large, throwing open the doors and admitting every one likely to be interested in the subject discussed. No fee was expected for attending the sessions, every one was welcome, and whenever the capacity of the meeting halls was found to be insufficient larger halls were provided. It is well known that the art institute, with all its rooms, was given over to the executive committee for this purpose, and two large halls, the Washington and the Columbus hall, were erected in the court between the two main wings of the building, and there is no gainsaying that very good use was made of these facilities. The meetings, as a rule, were attended by large crowds, and good lectures, sometimes brilliant addresses, were delivered free of charge to the public.

Conditions were different in Paris. There the attendance at the congresses was restricted to those who by the payment of a fee of 10 and sometimes 20 francs had enrolled themselves as members. Other visitors were, as a rule, excluded; at any rate, I witnessed the spectacle of admittance being refused to people who were not in possession of membership cards. If they found entrance it happened apparently as an exception only by escaping the vigilance of the doorkeeper. The result was that the congresses were not half so well attended as in Chicago, and were limited to a great extent to those who took special interest in some special subject, especially the lecturers themselves and their families and personal friends.

The advantage which the French committees derive from this restriction will be found in the collection of a fund which is to be utilized for the publication of the transactions and lectures. It was felt to be a disadvantage in Chicago that the committee had no funds for the publication of the transactions, and it remains to be seen what advantages may be offered by the French method of making the attendance of the meetings contingent upon the payment of a fee. The undersigned is inclined to believe that the American method of making no restriction and collecting no funds is by far preferable. It renders the meetings more interesting by disseminating the seeds broadcast. It gives the impression of a greater breadth and a larger hospitality to foreign visitors, and is more befitting a country where the desirability of diffusing knowledge as much as possible has become a principle of the life of the nation.

The French committees endeavored to render the sessions truly scientific and systematic by sketching plans for the subjects to be discussed. This seemed superior to the haphazard methods of the American congresses, where unbounded liberty was allowed to the speaker. However, when the time came to hold the sessions, the French at Paris were as much dependent as the Americans at Chicago upon the materials offered, for one can cook only with the water that is on hand, and thus the Paris congresses exhibited the same lack of system and

nearly the same motley appearance for which the Chicago congresses had been criticised by Europeans.

Whatever may be said in favor of the French management of the congresses, the American method seems to me superior and to promise better results.

Although the French committees endeavored to act with more circumspection, their nominations were by no means more discreet than those of the Chicago managers of the World's Fair congresses, for the mistakes of which the Chicago committee might have been accused were committed probably in the same degree by the French committees. They frequently selected members of minor significance and ignored men whom they ought to have considered first. The truth is that an ideal and perfect management of such congresses is almost an impossibility. Much haphazard work must be done, seeds must be scattered whether or not the harvest may be expected, and thus it seems wiser to be rather too generous in inviting the cooperation of the rest of the world and also to give a wide scope to the freedom of speech of the guests. The sole difficulty in the management of congresses on the basis of a generous application of the principle of freedom is presented by the unavoidable presence of cranks and bores, the representatives of erratic ideas and of tiresome mediocrity. They were more frequent in Chicago, but were, if they were admitted at all, allowed to vent their notions in some of the many smaller halls of the art institute, and their effusions were thus rendered harmless and inoffensive.

While the nonpublication of the transactions of the innumerable Chicago congresses may be regretted, I believe that the very best of the papers read on that memorable occasion have found publication in various magazines and in book form. Thus I trust that the best has after all been preserved, and only some of the minor details have been lost. I ought to add at the same time that all the papers and a great number of manuscripts which were in the hands of the chief managers at the time of the closing of the Chicago congresses, especially of the parliament of religions, have been preserved through the care of the inaugurator and president of the World's Congress Auxiliary, the Hon. Charles Carroll Bonney, and are now deposited in the Chicago Library building, in a room devoted to the purpose. Thus, the material will remain available to students of history who propose to make a specialty of the transactions of these congresses.

Prof. C. H. Toy, of Harvard University, and Prof. Paul Haupt, of Johns Hopkins University, attended the congress of the history of religions as official delegates of the United States. The other two delegates of the United States did not make their appearance.

The congress of the history of religions was perhaps more interesting to Americans than any other, as it had originally been under-

taken for the avowed purpose of continuing or repeating the Chicago parliament of religions. This, however, proved impossible on European soil. It seems that America was the only country in which an enterprise of such tremendous significance could have been accomplished.

The fact is that both Republics, the United States and France, profess to be neutral in matters of religion, and they are so, but with this difference, that while the United States is friendly toward the religious development of its citizens the French Government is indifferent, which practically means that the Government is nowhere inclined to promote the religious spirit. American neutrality is impartiality; French neutrality is hostility. The difference is to some extent conditioned by the fact that religion in France is almost identical, at least for the large masses of the population, with the Roman Catholic faith. The Protestants and Jews being very small in number, are commonly regarded as a *facteur négligeable*.

The plan of holding a religious parliament in connection with the French Exposition of 1900 was entertained for some time by the Abbé Charbonnel, but it failed for reasons which can not be explained here. The congress of the history of religions was held on the Exposition grounds with the express proviso that it should not be a parliament of religions like that which took place in Chicago in 1893. The Government of France professedly would not brook a religious enterprise of that kind, and thus the organizers of this special congress had to give assurance that it should be a congress strictly devoted to the history of religions; that it should not be a gathering of representatives of the various living faiths of the world, but only of scholars who would present essays on historical subjects connected with the religious development of mankind. This is the reason why the name "Congress of the history of religions" was selected for this congress, and it became practically, in a sense at least, a meeting of folklorists.

That the Protestants, although they form a very small minority of the French population, numbering all together only about 600,000 souls, played after all a very important part in the scientific and religious world of the French Republic became especially apparent in the congress of the history of religions. The president and secretary of the congress, the Messieurs Réville, father and son, were Protestants, and the Protestant element was very predominant among the speakers. By the side of an Egyptologist such as Professor Naville, the folklore element was strongly emphasized by the presence of Professor Merilier, of the Sorbonne, Paris, and Prof. Count Gubernatia, of the University of Rome. The special delegate of the French Republic to the parliament of religions at Chicago, Monsieur Bonet-Maury, spoke enthusiastically about the Chicago parliament of religions, and gave expression to the sentiment that the religious spirit which pervaded

this unique assemblage of the American exposition was not entirely absent in the scholarly sessions of the Paris congress.

World's fairs were originally undertaken for purely mercantile purposes, and it was an American innovation when the Hon. Charles Carroll Bonney proposed to make the Exposition represent the entire scope of the civilization of its age, thereby rendering it educational rather than commercial. It must afford great satisfaction to the American patriot to find that this idea has taken a firm hold of the minds of the world, and that in the future no exhibition can ever be held which can lay any claim to universality without having the ideal possessions of mankind represented in such gatherings of the men of science, the arts, and religion. And the realization of this ideal will contribute much to the grand aim which was pronounced at the Chicago parliament of religions to be—

To make the whole world one in sympathy;
To made the whole world one in mental aim;
To make the whole world one in moral power;
Learning and virtue passports to all lands.

It remains to be hoped that the United States of America will prove faithful to its ideal of a policy of good will toward all nationalities, and we recognize in the holding of such congresses one of the most powerful means of removing the old national prejudices and of establishing peace on earth.

CONGRESS OF HOMEOPATHY.

The international congress of homeopathy held its meetings July 18 to 21, and the discussions were open to all legally authorized practitioners. A specialty was made of individual reports from each country. The subjects of discussion were grouped in the following manner:

1. General medicine: Physiology, general pathology, bacteriology, ætiology, diagnosis and prognosis.
2. Materia medica and pharmacy.
3. General therapeutics: Posology, polypharmacy, isopathy, serotherapy, opotherapy, electrotherapy, hygiene.
4. Applied therapeutics: Monographs and observations.
5. Specialties: Obstetrics and gynecology, diseases of children, dermatology, ophthalmology, otology, laryngology, surgery, odontology, veterinary medicine.
6. Varia: History of homeopathy, professional interests (teaching, propaganda, press, hospitals, dispensaries).

REPORT ON THE CONGRESS OF HYGIENE.

By Dr. LUCY HALL-BROWN, *United States Delegate*.

The congress of hygiene opened August 10, at the Faculté de Médecine, and closed August 17.

The work of this congress I consider to have been of the very high-

est importance and the papers read were of world-wide interest and application. Among them were:

- M. Edouard Balliant, on "Legislation and regulation of labor."
- M. Gustave Reves, on "The hotel chamber."
- M. Albert-Levy, "Hygiene of foods."
- M. Dr. Eugene Deschamps, on "Industries and hygienic education in the schools."

Among the entertainments was a magnificent reception given by the president of the congress, Professor Brouardel. Monsieur and Madame Waldeck-Rousseau, president of the Conseil des Ministres, also gave a reception—an elaborate and costly affair. The city of Paris gave a grand reception at the Hotel de Ville and an excursion to the Parc Agricole at Acheres.

The grand banquet of the congress was held at the Auberges des Nations, with a visit to the Theatre du Palais in Old Paris.

One especially to be commended feature of this congress was that all the papers that were to be read had been previously printed in uniform pamphlet form and copies of the complete list were furnished to each delegate. I am making many translations of these papers for the public prints.

PROPHYLAXIS OF TUBERCULOSIS.

Paper read at the congress of hygiene by Dr. E. Malroy, director of the bacteriological institute at Liege, Belgium, and translated by Dr. Lucy Hall-Brown.

Thanks to the works of the French congress on tuberculosis, the congress of Berlin, and that of Rome on the struggle against tuberculosis among the people, public opinion is definitely impressed with the most important question that hygiene has to decide during the century that is now commencing. The struggle against tuberculosis appears more and more as one of the most important social problems, because above all it taints the working classes, attacking them at the age of their greatest activity.

To the Germans is given the credit to have mostly contributed to the great movement in favor of popular sanitariums, which has already resulted in the construction of numerous establishments in different regions of the Empire. It is true that this initiative on the part of our neighbors has been inspired by the vast system of insurance against disease and permanent invalidism issued to workmen. If tuberculous workmen had been abandoned to their fate and to the charge of the invalid bureaus, it would have been the ruin of insurance companies.

General prophylaxis and the construction of salubrious habitations and other social enterprises begin to assume enormous proportions in Germany. In the one year of 1889 the insurance companies for workmen dispensed more than 30,000,000 marks, of which 21,500,000 went for buildings to let to associated workmen and 10,500,000 to the erection of asylums, convalescent homes, popular baths, and infant gardens. These sanitariums are not only intended as a refuge for tuberculous patients in the inception of the disease, but to give them a hygienic education which will aid them on their return home to protect others from contamination.

It is undisputed that this great enterprise applied on such a scale in Germany, where the working class forms nearly one-fourth of the total population, should have the most happy results, and that in that country one will soon see by statistics that there is a diminution of those attacked by tuberculosis. This advance stride that Germany has taken commands the admiration of the whole world. But, say some, the countries that are not under obligatory insurance endowment against disease are condemned to remain in the background as to sanitariums. In the absence

of rich companies, how can the establishments be supported during the sojourn of invalids? It seems as if the time were far off when public assistance, represented in France and Belgium by Government hospitals and benevolent societies, will offer to the working classes a system of prevention against this disease.

If these fears are partly justifiable, they have already lost much of their importance, since Switzerland and Belgium have proved that in those countries where obligatory insurance does not exist popular sanitariums can be built and filled with patients. The example of these countries is enough to inspire in our French friends (who have with much energy taken the head of the antitubercular movement) confidence in the sanitarium idea for working people. The Swiss already possess six beautiful establishments fully equipped and active and which gave magnificent results in hygienic education and restoration to health. Belgium has entered into the movement, and recently in the province of Liege a large popular sanitarium has been built to close the door of entrance of tuberculosis in that region.

In Switzerland it is the solid public opinion that makes the venture a success. The cantons, towns and villages, philanthropic societies, religious associations, workmen circles, lodges, all join to organize and sustain the sanitariums. In Belgium it has been more difficult by private means alone to secure this protection against tuberculosis. A committee of eminent persons was formed who elaborated extensive and very fine ideas, and they succeeded in collecting the money for the construction of a sanitarium. But a point that one most often forgets is that it is difficult to assure the patronage of an establishment, and, on the other hand, in Belgium one can not count upon public assistance in so new an undertaking.

Without a practical understanding by the official administration of its responsibilities, and in the presence of general inertia, the question will long remain a vexed one. The provincial councils in Belgium enjoy a certain autonomy, notably in matters relating to public hygiene. These councils delegate their powers to certain persons who constitute the permanent deputation charged with the administration of provincial affairs. It is this permanent deputation at Liege that comprises the first in Belgium, the one that has taken the lead in the matter of a people's sanitarium. It is interesting to follow how this idea took root in the minds of the provincial administration.

In 1894, at the time of the discovery of antidiphtheretic serum, the provincial council of Liege comprehended at once the importance of starting a bacteriological laboratory for the analysis of diphteric exsudatis. It was at once organized and rendered such valuable service that it was decided to extend its mission to the examination of all microbes, without which prophylactic measure it could not be on a scientific basis. Further, a disinfecting equipment was attached to the provincial institute, to be at the command of the sanitary authorities throughout the province. The bacteriological prophylaxis gained the confidence of the population quickly and the permanent deputation became rapidly convinced that they would be sustained by public opinion if they fought resolutely against the most redoubtable of infections, tuberculosis.

In 1898 it was decided that the provincial bacteriological institute should provide physicians and the sanitary authorities to combat the ravages of Koch's bacilli, examine gratuitously expectorations, disinfect contaminated localities, and have conferences in different cantons of the province, all these precautions being the principal means employed in the work. But there was still wanting the most important measure—that which would crown all other antitubercular work—the sanitarium that would cure by dietetics and prophylactic education. It was immediately decided to study the questions. Before undertaking a work of such seeming proportions it was necessary to be assured that there would be constant at the sanitariums a sufficient number of invalids.

Would the working class understand the necessity of an early cure applied to subjects not yet bedridden, when the workman does not generally abandon his shop

until the last extremity? An eloquent appeal was addressed to numerous associations in the province, to industrial societies that had for their purpose the aid of workmen, to all those who were capable of comprehending the high social purpose of the projected work. That sort of referendum was supported by a vigorous campaign of popular illustrated lectures presenting to the public, even throughout the villages, the lesions of tuberculosis, the destruction produced in the organism by the Koch bacilli, and the protection from the lesions or the restoration in sanitariums.

This produced such a strong public opinion that the provincial assembly voted 700,000 francs (\$140,000) for the first Belgium people's sanitarium. The societies engaged themselves to pay for the maintenance of those susceptible to benefit. The benefit societies particularly have arrived at the same conclusion as the insurance companies of Germany—that outside of duty there is a real interest in social economy in helping the tuberculous workman.

These benefit societies are organizing to sustain their new work, giving lectures, holding fêtes, establishing lotteries, the receipts of which go to the sustenance of patients at the sanitarium. The lectures are given by the personnel of the bacteriological institute. It is estimated that the cost of a patient is 250 francs (\$50) for three months. The mutual aid societies appear equally desirous of cooperating with the prophylactic work. Of course, a public power, like the provincial council at Liege, taking in hand the matter assures a success a merely private enterprise might not meet.

After being built and equipped the success of the sanitarium depends on the medical director. He should be practical, scientific, philanthropic. In countries that do not have the generous audacity of the English and American private citizen, it is necessary to go to large cities to obtain money and personal talent.

It remains for private individuals charitably inclined to succor families in the absence of the head of the family and to procure easy work suitable to his strength when he is restored to them. Organized benefit and industrial societies in different localities as auxiliaries to provincial or departmental work is desirable and this is the case in the province of Liege; but other provinces of Belgium do not as yet participate in this plan. M. Calmetti advocates a series of dispensaries in all the popular centers, at public expense, directed by physicians thoroughly conversant with tuberculosis.

There the patient must receive special diet, be assured of the means to rest and be cared for and that his family will be looked after. The physicians of the dispensaries should visit domiciles, disinfect, inspect sanitary arrangements, and report to the authorities. M. Calmetti also proposes to tax citizens in proportion to their incomes, so as to have money on hand for these purposes. Evidently it is to the interest of each that tuberculosis disappear and each should be willing to pay for his own protection. The time is not far distant when every workman will form part of a mutual benefit society—they and their families—and public charity will be but a remembrance of a false conception of social duties.

Outside of these special provisions for the afflicted there should be hygienic measures that reach all classes and special advantages for the workers, such as salubrious habitations, surveillance of workshops, distribution of good, sterilized milk, hygienic inspection of schools, poor children's clothes, vacation colonies, limitation of hours of work. The success of the campaign against tuberculosis depends, above all, on physicians. The diagnosis should be early, and all the means above advocated should be used by them to restrain the contagion. The tuberculous workman often does not decide to go to a physician until his organism has been seriously ravaged. For this reason visits should be made at regular intervals to all workmen to learn of their state of health; at schools little children should be frequently examined.

Workmen connected with benefit societies or under care of public dispensaries should be from time to time visited by physicians. Physicians should more generally make known the social miseries that come under their observation from day to day.

Reforms would then come more quickly, especially would the crusade against tuberculosis be helped. The physician should be the veritable educator of the working classes. He is their natural protector.

We propose the following conclusions:

1. Organization of medical service, of public charity, mutual benefit societies, companies insuring against diseases requiring general and special prophylaxis, hygienic education (popular courses of lectures), permanent inquiry as to habitations, alimentation, the conditions under which men work, corporal examination of suspects in the permanent dispensaries.

2. Early diagnosis, regional bacteriological laboratories where researches are gratuitous. For the patient immediate access to the air cure and the measures of disinfection and prophylaxis. In the countries where life and accident insurance is obligatory the sanitariums for air cure should be built by the companies; elsewhere, where obligatory insurance is not in force, the construction of these establishments should be made by the provinces or counties, their operation being assured by the mutual benefit societies. For workmen who are not connected with the latter there can be distribution through the special dispensaries, giving succor, repose, alimentation, and care of the family during the cure.

3. Faulty instruction in hygiene and social medicine, chemical and bacteriological education of physicians to attain perfect knowledge of tuberculosis, its prophylaxis, treatment, and early diagnosis.

4. Propaganda of works on the subject favoring legislative measures demanding right conditions for the tubercular subject and general hygiene for the workman at home and in his shop.

REPORT ON THE CONGRESS OF HYPNOTISM.

By Dr. LUCY HALL-BROWN, *United States Delegate.*

The congress of hypnotism opened August 12, in the Palais des Congrès, and lasted four days.

This congress was conducted with great dignity and earnestness of purpose. The uses of hypnotism were strongly advocated and the abuses even more strongly denounced. Among the more important papers read were:

Dr. Oskar Vogt, of Berlin, on "The value of hypnotism as a means of psychological investigation."

Dr. Baron de Schrenck-Notzing, of Munich, "Some remarks on the subject of suggestion and hypnotism in their relation to jurisprudence."

Dr. Arie de Jong, on "Hypnotic suggestion in the treatment of alcoholism and the morphine habit."

Dr. Bourdon, of Meru, on "Importance of hypnotism in psycho-therapy."

Dr. Berillon, of Paris, on "Hypnotic suggestion and psycho-therapy in the treatment of morphinism."

Among the entertainments of this congress was one given by Prince Roland Bonaparte, a reception at his residence, avenue d'Jena; one at the Hôpital Salpêtrière, where scientific demonstrations were made and an elaborate luncheon served, and one at Institute Psycho-physiologique, rue Saint-André-des-Arts. Dr. Berillon, secretary of the congress, showed us a number of his patients who were being treated hypnotically, a most interesting exhibition and greatly appreciated by the members of the Congress.

JOINT-STOCK COMPANIES.

In 1889 a number of people interested in such matters organized an international congress on joint-stock companies, and the results attained seemed to warrant the holding of a second session in connection with the Exposition of 1900. In the interim there had been a great activity in the organization of companies of this character, and it was thought that enough experience had been gained to enable a central body to formulate rules of action and suggest legislation that might serve as a guide in future operations.

The subjects prearranged for discussion were:

Should stock companies of all kinds be subject to special legislation or amenable to common statutes?

Should the capital be full paid up or is it right that subscribers be permitted to take up stock at a discount? In the latter case, should the minimum rate of discount be fixed by law? Should it be permitted to pay for stock on the installment plan; and, if so, what should be the limit of each installment?

The shares of promoters; preferred stocks; conditions of their issue; powers and rights of the stockholders in general meeting.

In what way should the administration of the affairs of a company and the representation by proxy be regulated by law? Is it wise to allow shareholders to have the right to call a meeting of the company? In order to maintain control of the affairs of the company is it not well that the stockholders should have some means of securing the appointment of a board of audit independent of the board of directors?

The control of the financial affairs by official auditors. Should the right to amend the constitution be given to a simple majority?

In what way should the interests of creditors be protected? Is it right to issue bonds by lot without the special permission of the incorporating authority?

Is it advantageous to establish a special advertising medium? Should the constitution of the company be published in connection with the announcement that the subscription books are open? Should the financial condition be published periodically? Should publicity be given to changes in the board of directors or the executive committee or the official auditors?

What rule should be established for determining the nationality of a stock company so that there could be no confusion as to the laws that prevail in transacting business with the company?

Under what conditions should a company be admitted to the protection of the laws of a foreign country or plead before the courts of another country? What limitations should be placed upon the establishment of agencies abroad or the conduct of branch houses abroad? Is it best that each branch or agency should have its own board of control so as to be amenable to the laws and regulations of that country?

Should the affairs of the company be made public in all the countries where there are branches or agencies?

What laws should control the issue of bonds or stocks by the company for sale in foreign country?

CONGRESS OF LAW, MARITIME.

The congress of maritime law met at Paris October 1, 2, and 3. Before the opening of the congress the international maritime committee distributed to delegates who had announced their intention of attending a study in comparative maritime law by M. Autran, general

secretary of the French bureau of organization of this congress, also two reports of the German association. The deliberations of the congress were conducted along the following lines, taken up by three sections:

I. Responsibility of shipowners.

What conditions determine the degree of responsibility of shipowners:

1. Should this responsibility cover damage done to dikes, quays, etc.?
2. In case the captain does not carry out the obligations assumed by the proprietors of the ship? Certificates of the captain and the craft.

II. Assistance, rescue, and the obligations of aid:

1. Should there be uniform regulations passed by the legislators of various countries concerning the methods of maritime salvage?
2. What are the best measures to adopt in bringing about such legislation?
3. What basis should be fixed for remuneration?
4. When remuneration is due should the persons who are rescued contribute to it, or should the cost be shared between proprietors, the captain, and the officers of the ship, and in what proportion?
5. Is a contract made under peril subject to adjustment by the law, or is that a question of circumstance.
6. Are two vessels colliding against each other to aid each other, and to what extent?
7. To what extent should vessels aid each other in the case of foul running?

III. Regulations in the matter of foul running.

REPORT ON THE CONGRESS OF LIBRARIANS.

By MARY WRIGHT PLUMMER,

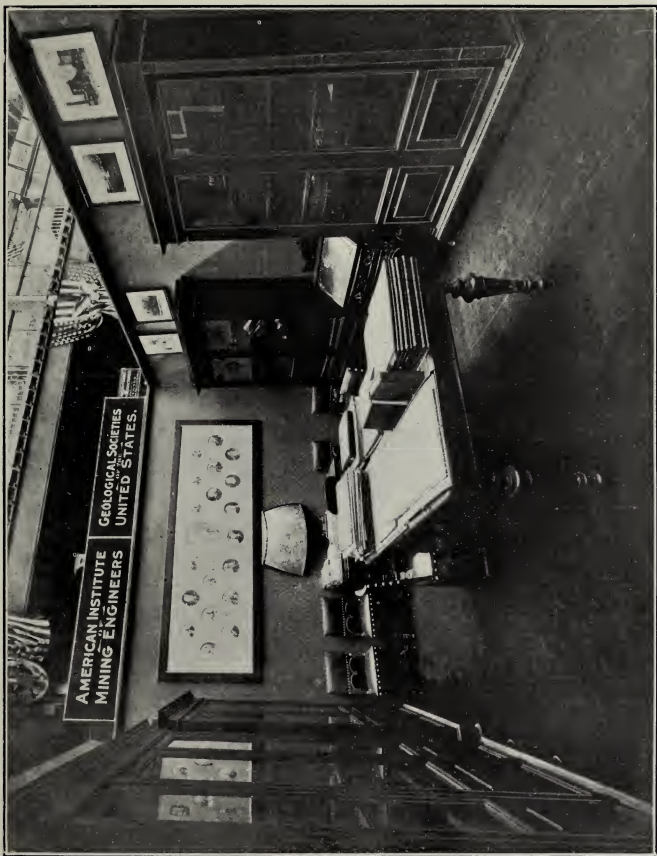
Director of the Pratt Institute Free Library.

In accordance with the request made to me during July by Dr. J. H. Gore, director of the department of organization of international congresses, I have the honor to submit herewith my report of the international congress of librarians at Paris, which I attended as an official delegate of the United States.

The congress opened August 20 and closed August 23, 1900. It was the first international congress of librarians held under the auspices of the French Government, and was considered so successful as to warrant a resolution at the last session to hold a similar congress every five years in Paris.

The membership, according to the printed list given out to members, was over 200, but a much smaller number of persons were in attendance. I should think there were not more than 60 present at any session.

Official delegates were sent by the following countries: Belgium, Canada, Cuba, Denmark, Greece, Hungary, Grand Duchy of Luxembourg, Mexico, Principality of Monaco, Russia, Sweden, and the United States. The delegates appointed by the United States were



H-19. LIBRARY AND HEADQUARTERS OF AMERICAN INSTITUTE OF MINING ENGINEERS, UNITED STATES GEOLOGICAL SOCIETY, DEPARTMENT OF MINING AND METALLURGY.

Mr. Herbert Putnam, Librarian of Congress; Miss Pauline Leipziger, librarian of the Aguilar Library, New York City, and Miss Mary W. Plummer, librarian of Pratt Institute, Brooklyn. Of these, the last-named only was present. The University of California sent its librarian, Mr. Joseph C. Rowell, as delegate. No other American institution or society was officially represented, though several other Americans were present at the meetings and a number appeared on the membership list.

The meetings were held in the new Sorbonne, in the Amphithéâtre Descartes, and were for the most part presided over by M. Léopold Delisle, librarian of the Bibliothèque Nationale, with M. Henry Martin, adjunct-conservator of the Bibliothèque de l'Arsenal, as general secretary.

Through the kindness of the secretary I had access at an early date after the congress to the minutes of the proceedings, and from them made a full translation, which was published in the Library Journal of New York, the number for September, 1900. From this I am enabled to make the brief synopsis of the important addresses, which you desire.

The opening address of the president, M. Delisle, called attention to the fact that while the rôle of the popular library and of the library connected with a school or college is well defined, that of the large general library is as yet undecided. He considered that there was need of an intermediary class of libraries to supply the wants of persons—notably literary workers, who must have quick and constant service—and to relieve in this way the libraries frequented by persons of erudition, scientific or literary. Another reform needed, he affirmed, was the restriction of employment in libraries to persons prepared for the work. As for every other profession, so for librarianship, there should be a technical preparation, as well as personal qualifications too often neglected. He then drew attention to the need of a general joint catalogue of the books in all the great libraries of Paris, and of a catalogue of their duplicates. These, with a fund for adding to their number, might serve as a lending library for the use of the libraries of the provinces. He asserted that the publication of the general catalogue referred to, while it might show incomparable riches, would also discover serious omissions. This subject led naturally to a reference to the French copyright law (*dépôt légal*), of which a much more rigid application is needed.

The only communications dealing with popular libraries, their extension and educational value, were those of M. A. S. Steenberg, state organizer of popular libraries in Denmark, and of the undersigned on the cooperation between public libraries and public schools in the United States.

The first paper to excite discussion was that of M. Henry Martin, general secretary to the congress, on the desirability of establishing in every capital city a central library of newspapers and other periodical publications. The point on which discussion turned was naturally the kinds of periodicals to be set apart in this way, there being some difference of opinion. It was finally

Resolved, That efforts should be made toward the creation in large cities of special libraries charged with the collection of political journals and newspapers.

The next communication of general interest was offered by M. Hiriart, librarian of the city of Bayonne, on the insects that infest libraries. The discussion of this paper, or rather of this subject, lasted about an hour, and was very animated. It culminated in the following resolution:

That experiments be conducted with all the exactness of scientific methods and with the collaboration of librarians, chemists, and naturalists, in the production and propagation of insects injurious to books, and that the investigation be made the means of remedying these injuries and of defining the precautions to be taken by those who manufacture paper and leather for books, as well as by the architects who select the materials intended for floors, shelves, and the furnishing of libraries.

At a later meeting the importance of this subject was still further attested by three offers of prizes, one of 1,000 francs and one of 500 francs, for the best memoirs, to be presented between December 31, 1901, and the same date of 1903, on the worms or insects which attack books and the best means to employ for their extermination; and a third offer of 1,000 francs for the best memoir on the study and the destruction of insects injurious to books and especially of those which attack bindings.

M. Stein, architect of the National Archives, presented the next subject to excite debate—a consideration of the French copyright law. He contended that the shortcomings of the *dépôt légal* in failing to deposit two free copies of every printed work in the Bibliothèque Nationale arose from imperfections in the law itself as well as from a disposition to evade the law. He recommended that requisition be made upon the publisher instead of upon the printer for these copies; that the time given to librarians for making their claims for books be extended, and that the number of intermediaries between the printer, or publisher, and the library be lessened. There was some agreement with his first recommendation, which was not participated in by M. Delisle, who called attention to the fact that there were many pamphlets and even books printed which were not published and could not be had from publishers. Strong confirmation of the statement of injury done by the delay of books, on their way to government libraries, in the prefectures and mayors' offices, was offered by several members, among them M. Ulysse Robert, the inspector-general of libraries and

archives. The conclusion of the discussion was finally voiced in the following resolution:

That the legislation relative to the *dépôt légal* be revised as promptly as possible and according to the following requirements:

1. That each volume or facsimile be delivered complete and in the same condition as for sale or distribution.

2. That the copies be sent directly and without intermediary to a central bibliographical bureau, where the redistribution may be made to the various public collections benefiting by these copies.

The librarian of the Faculty of Sciences of Marseille, M. Godefroy, presented a paper on "The use of printed slips for cataloguing." In regard to this subject, it was resolved—

That the use of printed catalogue slips accompanying new books issued should be extended, and that at least four such slips, edited in a uniform manner by the *Cercle de la Librairie*, should be presented with each book.

This was the last subject discussed, and the congress closed its sessions with the formal resolution before mentioned to meet every five years in Paris.

Such papers as the committee shall deem worthy or suitable will be published in the printed proceedings of the congress, which will probably appear early in 1901.

There was no action looking to international cooperation in any direction, and the subjects of the communications and discussions were largely such as to interest the librarians of the large and valuable collections constituting the majority of Continental libraries. The popularization of libraries and their work in the education of all classes of society seemed to concern the librarians of Denmark, Sweden, Russia, and Germany more than those of France. This may be due in part to the prominence of the Central Government of France in all that concerns libraries and to the lack of encouragement to private initiative. Whatever the cause, such assemblies as the congress described can not fail to be an influence for good, bringing up professional matters of all kinds for discussion, arousing interest, and promoting comparison of methods and ideals.

COOPERATION BETWEEN THE PUBLIC LIBRARY AND THE PUBLIC SCHOOL IN THE UNITED STATES.

[By MARY W. PLUMMER.—Read at the congress of librarians.]

The first libraries established in the colonies (called later the United States) were either connected with educational institutions or founded by small companies of educated men who, recognizing the lack of that participation in the news, the thought, and the information of the day, which was then in great part the life of the Englishman, united for the purpose of making a common fund of their private libraries, of importing from the Old World the more important of its new publications, of encouraging the native press, and of increasing the value of their literary possessions for all by lending them about. The oldest library of a subscription

nature, such as this, which is still flourishing, is the Library Company of Philadelphia, founded in 1731 by Benjamin Franklin. For a long time the subscription library, as it was called, was all sufficient.

The basis of the new Republic, with its democratic ideas, was public education; and free schools, directed by the colonies, through the agency of the people, had been established a long time before the Declaration of Independence—schools open to all, if not entirely supported by all.

The population was at that time comparatively homogeneous, and there was not that immense and continual influx of other races and other nations which now causes many Americans, patriotic but timorous, to doubt the expediency of the democratic experiment. The public schools were regarded as in some sort a panacea, and a large part of the population appreciated them and made use of them. Cities were relatively small, and were not yet the receptacles for human scum, which some among them would now seem to have become. There was enough liberty for those who wished to live rightly, and two generations reared in the atmosphere of independence of a country where all united to make the laws and then voluntarily obeyed them did not dream of what we of a later day have had to learn—that the experiment which they believed proved had only just begun.

As the problem became complicated, as in place of a theoretical democracy a real democracy began to appear, the schools as well as the subscription libraries became insufficient for public education. There were so many poor immigrants, still young, but not young enough to go to school; so many families obliged to utilize the work of their children to earn bread, after they had had but three or four years, if as much, of the public school. How could these make use of a subscription library? Besides, the need of other books than text-books began to be felt in the schools themselves.

In 1835 New York State, therefore, appropriated money for placing small libraries maintained by the State in the common schools, chiefly for the use of the pupils. The movement for libraries free to all gained ground constantly, but it was not until 1852 that the first of these libraries opened its doors—the Public Library of Boston, which is to-day the model of the larger part of the great free libraries of the country.

In 1853 the first step toward professional organization was taken in a conference of librarians assembled to make one another's acquaintance and to discuss the problems common to all libraries; but it was not until twenty-three years later, on the occasion of the Centennial Exposition at Philadelphia, that this conference was followed by a second, inaugurating thus the series of conferences which since then has not suffered interruption. The first conference, in 1853, bore fruit, nevertheless. In that year there was but one tax-supported free library. In 1876 there were nearly 2,000 libraries in the country, of which the majority were free and maintained by the people. The census of 1900 will show more than 4,000.

At present almost all the States have library laws, most of them permissive rather than mandatory; and State commissions have been established to encourage the founding of libraries by counsel and pecuniary aid.

In the first years of the national association—the A. L. A., as we are in the habit of abbreviating it—the members were engaged chiefly with methods and the technical side of the work, so that there resulted a certain harmony, even uniformity, in methods, creating at the same time, by means of the Library Journal, a body of professional literature which librarians have been able to refer to for information. But to-day these suggestions have lost a little in importance through having been decided, so to speak, for the majority of librarians, and the spirit, which has never lacked advocates, begins to take on more importance than the latter.

The work of the free public library, considered for a long time past by many librarians as an undervalued factor of public education, is beginning at last to attract the attention of those dedicated to teaching. In 1898 an important annual assembly of school principals and teachers, the National Educational Association, established a section for the study of cooperation between schools and libraries. Each year since

then the sessions of this section have attracted a large number of teachers, both men and women. The proceedings and communications are printed in the annual report of the National Educational Association, and in this way the idea of cooperation is able to reach every school in the country.

Evidently the librarian, who knows the resources of his library, understands better the possibilities of the work that the library can do for the school, of the help it can give, than the teachers; the latter, indeed, have always looked at the library from the outside, and have but dimly understood the use which they might make of it. The librarian has seized the occasion to demonstrate to teachers and pupils the value and utility of his collection with a zeal that places him among the ranks of true educators.

Following, in a few words, may be seen the history of cooperation: In 1876 Mr. Charles Francis Adams, of Massachusetts, who has suggested so many new points of departure, and swept away so many cobwebby theories in education, gave an address on "The use that may be made of the public library of a town in connection with the public schools in general, and in particular with the high schools and the higher grammar grades." "We teach the children to read," he said, "but we do not teach them how to read." He suggested that the schoolmaster (with us more often the schoolmistress) borrow from the library a considerable number of volumes to circulate among the pupils. He proposed that when the teachers should begin to ask for books necessary for their studies and those of the pupils the library should print lists of this collateral reading and retire these books from general circulation in order to put them in a place easily accessible to teachers and students. It is twenty-four years since then, and the little bit of heaven has leavened the whole loaf, but very slowly. Perhaps this last proposition was a presage of the practice which obtains now in many libraries of the United States—that of admitting the public without restriction to the shelves to examine books before making a choice. Of course these libraries, for the most part, have on their shelves a special collection of books suitable for every one.

In 1879 another note of progress was heard, and another of our present beliefs anticipated—the special preparation for the work of the library for children. Mr. Foster, public librarian of Providence, R. I., presented a communication at the annual conference in which he maintained that the librarian should understand certain principles which govern the nature and development of the child's mind, the order in which ideas are received, and in which intellectual processes have their origin. He dwelt with emphasis upon the importance of a personal acquaintance with teachers, because in knowing and influencing them the librarian could multiply infinitely his efforts for the children. He proposed also that some instruction should be given in the schools on the subject of the management and use of books.

The first library which made a report upon cooperation with the schools was that of Worcester, Mass., under the direction of its present librarian, Mr. S. S. Green. Mr. Green presented a paper on the subject at a meeting of the Social Science Association in 1880. The work had been begun the year before, after consultation between the school authorities and the librarians. From that day to this the number of libraries which have some sort of cooperation with the schools is almost equal to that of the public libraries themselves.

Up to the present there is no evidence that the two systems may become one, a result that would be undesirable, since the work of libraries is not limited—far from it—to the help which they can give to the schools; but the cooperation is becoming constantly closer and more friendly. Naturally it makes more progress in some localities than in others, generally on account of the more friendly and intelligent attitude of the teachers. The methods of help and of cooperation are almost as various as the libraries employing them. The more common are the following:

1. Visits of the teachers, accompanied by their pupils, to the library, to see engravings, photographs, maps, etc., serving to illustrate and explain the subject which the

class is temporarily occupied in studying. At the same time books are shown—the best authorities—in order to acquaint the students with sources other than their text-books. There are libraries which supply rooms expressly for the use of books and prints.

2. The offer of special cards to teachers, giving them the right to draw several books at a time—in general six—and to keep them a month or more. Some teachers make use of these books at home, for their own work; others keep them in the classroom, putting them at the disposition of the pupils.

3. The purchase of English classics or “standard works” by the library, to lend to the schools during a term of three months, or longer, as text-books or as supplementary reading. Sometimes, in place of a number of different books, the purchase consists of a number of copies of the same book, in order that it may be employed as a text-book. This latter method does not meet with the approval of many librarians, who contend that the schools should procure at their own expense books to be used in this way.

4. Visits of the librarians to the schools to awaken the interest of teachers and pupils.

5. The retiring from circulation of the books necessary for a class studying a given subject, for the required period; or, if the library can afford it, the purchase of duplicate copies to be set aside for class use.

6. Exhibitions of engravings or photographs on the walls of the library, to illustrate the lessons given in the schools, or attract attention to a subject too little known and to the books treating of it.

7. Lending of books to teachers during the summer with the privilege of keeping them during the long summer vacation.

8. Preparation of lists of books and articles for the pupils who have compositions to write or who must take part in school debates.

9. Lending of picture books to the primary schools and public kindergartens.

10. Designation of certain shelves in the library as belonging to certain teachers, who place upon them the books they wish to recommend to their pupils. The name of the teacher is affixed to the shelves, and the pupils show much interest in these books, and something of the pride of the proprietor.

I have enumerated some of the numerous methods which enable the library to put itself at the service of the schools. Others have been suggested, but not so generally adopted.

In one of our cities (Milwaukee) a list of books for children has been incorporated in the manual of instruction for the schools, of which each teacher has a copy. Elsewhere a course in elementary bibliography and in the literature written for children has been proposed as a part of the regular course for students in normal schools.

On the side of the teachers the following suggestions have been made:

Visits to the library by each class in turn, accompanied by a person well acquainted with children's books, for the purpose of examining the books, explaining their usefulness, etc. The first difficulty in this case would be to find the person endowed with this liberal and profound acquaintance with the literature suitable for children; for, alas, we are finding out that we have trusted too much to publishers in this respect, and we must root out generally the weeds that have grown up among the grain. Fortunately, the special education that is being given now to the students in our library schools seems to promise a more critical and rigorous examination of these aspirants to the affection of children, and we may hope, therefore, to see good writers, now too nearly forgotten, restored to favor.

Another teacher suggests that books of all classes be kept in the class room, to be lent to the pupil as a reward when he shall have learned his lessons.

The Commissioner of Education lays stress upon the advantages that would ensue, even for pupils of the grammar schools, from the use of various authorities in place

of the single authority of the text-book, one of these being the increase in vocabulary from reading a variety of writers. He asserts also that the seminary method, as it is called with us—i. e., the method of studying several authors on the same subject, verifying their assertions, comparing them, separating the true from the false in what they say—can succeed only when the students can make use of a good library, and that in such case the method can be employed with success not only by college students but by those of high schools, and even of the higher grammar grades.

The work done by libraries which furnish books regularly to the schools is called organized cooperation; but the larger part of the assistance given by libraries is tendered to individuals, teachers and pupils, who come to seek it. Of this non-organized help the librarian can speak more intelligently, because he treats directly with the library's beneficiaries.

Although it is twenty years or more since the idea of the public library as a reservoir of material for the schools penetrated the minds of librarians, it is only within a few years that this phase of its work has presented itself as of the first importance. To come to the aid of instructors and of students, from the kindergarten to the college, to fill the gaps in the education of those obliged to leave school before reaching the high school, to assist the ignorant person, who begins to realize his lack of instruction, here, in general terms, is the work that our libraries are doing in the way of education.

The establishment of special rooms and collections of books for children has inaugurated a serious and growing work for elementary classes. As soon as we had classified children apart, and begun to observe them, we found ourselves obliged to adopt different methods of meeting their intellectual needs and treating their personality. There resulted, in two of the schools of library economy, the foundation of a special course for the training of children's librarians. At the library of Pratt Institute, which I have the honor of representing here, we have admitted to the children's room the teachers of primary schools and the occasional parents who show some interest in the reading of their children. In this way we hope to unite the parents, the instructor, and the librarian in a common effort for the advancement of the child.

The American public-school boy who leaves school before reaching the high school comes generally from a family of very moderate means, the father a small storekeeper, perhaps. At home, as a rule, there are no books; in his surroundings—respectable and honest for the most part—there is no culture properly speaking. The newspapers that the family read are inferior, and these are all that they read. How help to lift the child above this low level? For to lift the individual is the only pure means of improving the people as a whole. The schools can give him the instruction absolutely necessary for the struggle for life, but the association of thinkers and persons of cultivation and refinement is necessary to develop what germs of good taste and æsthetic perception may lie latent. Where can we meet these thinkers, these cultivated? The friends of his parents are like them; his own friends are children growing up in conditions similar to his own. His association with the teacher of the public schools, with the Sunday-school teacher, if he has one, is neither intimate enough nor of long enough duration to avail him much; but he can have at all times the company of books, which offer him a world of superior thoughts, elevated ideas, pure and correct language. This is why the choice of books for reading—that is to say, chiefly works of the imagination—is so important. The portrayal of simple and sincere manners and morals, the elimination of the complicated, the vulgar, should characterize the books given to the children of a democracy, children who one of these days will have the right to make the laws and prescribe the education of another generation. As long as we yield to the persistent advertising of harmful books, so long shall we retard the progress of the people toward the true ideals of the republic.

LIFE-SAVING AND FIRST AID TO THE INJURED.

The topics assigned for discussion before this congress were grouped under eight general heads, each general division being taken up by a single section. They were:

Shipwrecks far from the shore.—Collision at sea.—Signals by pigeons and special devices.—Apparatus for avoiding collisions.—Ways and means of rescuing people.

Shipwrecks near the shore.—Equipment of life-saving station.—Administration, organization, and purpose of the stations, with an account of the results achieved since 1889.

Shipwrecks cast ashore.—Care and treatment of the drowned.—General statistics.

Life saving on the rivers.—Laws and regulations relative to navigation.

Methods of fighting a fire before the arrival of the fire engines.—Fire extinguishers for dwellings, factories, and public places.—Popularization of the methods of preventing fires.

Life-saving on thoroughfares.—Prevention of accidents caused by men, animals, and vehicles.—Police intervention.—Care of the injured.—Relief organizations along dangerous routes.—Rescue in case of railroad accident.—Transportation in cases of epidemics.

Measures for preventing accidents in factories.

Part played by life-savers in time of war.—Relation of relief corps to the wounded.—Service of field hospitals.

Assistance to life-savers who have fallen victims in the discharge of their duty.—Insurance for their benefit.

Contests of devices for life-saving, ambulance corps, and apparatus and instruments for affording first aid to the injured.

REPORT ON THE CONGRESS OF MATHEMATICS.

By CHARLOTTE ANGAS SCOTT,

Professor of mathematics at Bryn Mawr College.

The international congress of mathematics was held early in August, 1900, the meetings extending through the week August 6 to 11. The attendance was not nearly so large as had been expected; about 225 mathematicians were actually present, but several who had intimated their intention of being present and had paid the membership fee of 30 francs were unable to attend. Accurate information as to the precise numbers could not be obtained, inasmuch as only one list of names was issued, on the first day of the congress, and this was necessarily imperfect, containing the names of some who were unable to carry out their expressed intention of being present, and failing to record the names of some who registered later. The universities and colleges of the United States were represented as follows:

Bryn Mawr, Professors Harkness and Scott; California, Prof. Irving Stringham; Chicago, Dr. Harris Hancock; Clark, Professor Webster; Dakota, Professor Pell; North Western University, Dr. Keppel; Georgetown, Professor Hagen; Haverford, Prof. E. W. Brown; Leigh, Professor Macfarlane; Leland Stanford Junior, Pro-

fessor Allerdice; Princeton, Professor Lovett; Texas, Professors Dickinson and Halsted; Vassar, Professor Ely.

In addition to those above, who were actually present, the names of Professor Moore, of Chicago, Professor Legras, city of New York, and Dr. Artemas Martin, appear on the list of members.

From other countries, whose contingent exceeded five, the numbers present were approximately: France, 90; Germany, 25; Italy, 15; Belgium, 13; Russia, 95; Austria, 8; Switzerland, 8; England, 7; Sweden, 7. Other European countries, with Canada, Japan, Mexico, and South America, sent 25 members.

The proceedings consisted of two general meetings of about two hours each, held on the mornings of Monday, August 6, and Saturday, August 11, and sectional meetings held on the four intervening days. At the first general meeting held at the *salle des congress*, the officers of the congress were appointed.

Recognition was accorded the official delegates and the addresses of the day were delivered by M. Moritz Cantor, of Heidelberg, and Vito Volterra, of Turin. Abstracts of these addresses are appended to this report.

At the final general meeting held at the Sorbonne, on the morning of August 11, it was decided that the next congress should meet in 1906, in Germany, accepting the invitation of the German Mathematical Society, in whose hands the details were left. It was intimated, however, that the place would probably be Baden-Baden. The two addresses of the day were then delivered by M. Mittag-Leffler, of Stockholm, and M. Poincaré, of Paris. An abstract of M. Poincaré's address is appended to this report. It is not possible to give any account of M. Mittag-Leffler's paper, which dealt with a part of the life of Weiserstrass, and his scientific relations with his contemporaries.

For the reading of special papers six sections were organized on August 7, 8, 9, and 10 as follows:

Section I, arithmetic and algebra.—Tuesday, Thursday and Friday mornings; president, M. Hilbert; secretary, M. Cartan.

Section II, analysis.—Tuesday and Thursday mornings; president, M. Painlevé; secretary, M. Hadamard.

Section III, geometry.—Tuesday and Thursday afternoons; president, M. Darboux; secretary, M. Niewenglowski.

Section IV, mechanics and mathematical physics.—Tuesday and Thursday afternoons; president, M. Larmor; secretary, M. Levi-Civita.

Section V, bibliography and history.—Wednesday morning and afternoon and Friday morning; president, Prince Roland Bonaparte; secretary, M. d'Ocagne.

Section VI, teaching and methods.—Wednesday morning and afternoon and Friday morning; president, M. Cantor; secretary, M. Laisant.

Sections V and VI, however, amalgamated and sat as one body.

A complete list of the papers offered can not be given, as no daily programmes were issued, only a preliminary programme, which was corrected orally, from time to time, as occasion arose. The following, however, is substantially correct:

Section 1.

- M. Autone, "On the finite groups contained in a Quaternary linear group."
 Mr. H. Handcock, "Remarks on Kronecker's modular system."
 M. C. Stephenos, "On the separation of roots in algebraic equations."
 M. Von Koch, "On the distribution of primary numbers."
 M. Fr. Meyer, "On Cataldi-Brounker's generalization of a continued fraction."
 M. R. Perrin, "On the properties of a certain covariant of the binary form of the fifth order and their application to the solution of equations."
 M. Pade, "On the recent developments in the theory of continued fractions."
 Mr. L. E. Dickson, "The known systems of simple groups and their interisomorphisms."
 M. G. Rados, "Note on the theory of orthogonal substitutions."
 M. Gavrilovic, "On a remarkable property of determinants."
 M. Arnaudeau, "Note on triangular table of numbers."
 Mr. Martin, "A method of computing the common logarithm of a number without making use of any logarithm but that of some power of ten."

Section 2.

- M. Mittag Leffler, "On analytic functions and expressions;" "On an extension of the series of Taylor."
 M. J. Bendixon, "On the definite curves in differential equations."
 M. J. Drach, "On the integration of equations from partial derivatives of the second order."
 M. Jahnke, "On the theory of theta functions of two arguments."
 M. Tikhornandritzky, "On the vanishing of the theta functions of several variables."

Section 3.

- Mr. Lovett, "On contact transformations between the essential elements of space."
 Mr. Macfarlane, "Application of space analysis to curvilinear coordinates."
 Mr. J. Stringham, "Orthogonal transformations in elliptic or in hyperbolic space."
 M. Jamet, "On Salmon's theorem concerning cubic planes."
 M. Vaes, "On regular and semiregular bodies."
 M. A. Padoa, "On a new system of definitions for Euclid's geometry."
 M. Issoly, "On pseudo-surfaces in general and a particular of minimum pseudo-surfaces."
 Also papers by MM. Amodeo and Stephanos and others.

Section 4.

- M. Ch. V. Zenger, "The movement of celestial bodies according to the laws of electro-dynamics."
 M. J. Boccardi, "On calculations of the special perturbation of the smaller planets."
 M. I. Fredholm, "The inversion of definite integrals and their application to problems in physics."
 M. C. Somigliana, "On Maxwell's theory of action in distance."
 M. Hadamard, "Relations between the real characteristics and imaginary characteristics of differential equations of several independent variables."
 M. Volterra, "Comment on the imaginary characteristics of the equation of Poisson and a similar equation with real characteristics."

Sections 5 and 6.

- M. Hilbert, "On the future problem of mathematics."
 M. Fujisawa, "On mathematics of the old Japanese school."
 M. A. Padoa, "A new irreducible system of postulates for algebra."

M. d'Ocagne, "On the many modes of applying the graphic method to calculus."

M. de Galdeano-Zoel, "Note on the mathematical critic."

M. Veronese, "On the postulates of geometry in drawing."

M. Capelli, "On the fundamental operations of arithmetic."

M. Crawford, "The elementary demonstration of this theorem—the arithmetical means of any number of positive quantities is greater than their geometrical means."

M. Leau, "Propositions of a pledge for the adoption of a universal scientific language."

Also papers by M. Peano and others.

In the absence of their authors a few of the papers were not read, but the intention is to include them in the volume of proceedings of the congress, which will shortly be issued, and will contain a full report. Out of about fifty communications from the various members, six were from members connected with institutions in the United States.

Among these special papers one by M. Hilbert, of Göttingen, may be mentioned as of peculiar value and suggestiveness and as marking out proper directions for mathematical effort. He dwelt on the importance of the special problems of any period in determining the trend of mathematical thought. He indicated the characteristics of a problem suited for special study, and showed the nature of the result to be sought for; there must be either (1) a rigorous solution, obtained by a finite number of logical processes from hypotheses furnished by the problem itself, or (2) a rigorous proof that such a solution is impossible. He considered several problems worthy of attention at the present time, referring for a more complete list to an article in the *Nachrichten der Kaisl. Gesellschaft zu Göttingen*, 1900.

Two general reports on recent researches of the authors were of much interest, namely, those presented by M. Padé, of Lille, and by Mittag-Leffler. In the first of these, on "Recent developments in the theory of continuous fractions," M. Padé gave an account of the development of a function as a continued fraction. It is found that the development is not unique, but that the different continued fractions have certain properties in common.

In Mittag-Leffler's recent researches in the "Theory of functions" is involved a new geometrical notion—that of a "star of convergence." These researches are expounded in the *Acta Mathematica*, vols. 23, 24 (1899, 1900), "On the analytic representation of a uniform branch of a monogenic function." Some of the papers called forth brief discussion, but in general they were not of a nature to excite extemporaneous comment.

Only one general discussion arose in connection with the resolution offered by M. Leau in favor of the adoption of a special so-called universal language as the vehicle for scientific publications and communications. Those who spoke in favor of this were most ardent in urging its usage, and supported the new universal language, Esperanto, whose

advocates have been very much in evidence lately, and have apparently taken concerted action in offering such resolutions at various scientific meetings. The motion was vigorously supported and as vigorously opposed. Finally, in place of the resolution offered, a nugatory substitute was passed, the congress placing itself on record as opposed to unnecessary diversity in the languages employed. It appeared to be the sense of the meeting that English, French, German, and possibly Italian may be fairly regarded as necessary.

No special business was transacted, though several matters had been referred to this congress for consideration by the Zurich congress of 1897, questions regarding the adoption of some system for the classification of the mathematical sciences, the preparation of reports on different branches, and the possibility of instituting some permanent organization. The intention had been that the organizers of this particular congress, together with the officers of the Zurich congress, should give some preliminary attention to these questions and make arrangements for their proper consideration at one of the meetings in Paris, but no such steps were taken. The proceedings of the congress were confined to the papers and addresses presented at the sectional and general meetings, and to the usual social functions.

Abstracts of the addresses of M. Cantor, Volterra, and Poincaré are appended from the report in the Bulletin of the American Mathematical Society.

SUR L'HISTORIOGRAPHIE DES MATHÉMATIQUES.

[By M. Cantor.]

During the century drawing to its close the character of mathematics has changed; its devotees are now differentiated into geometers, analysts, algebraists, arithmeticians, astronomers, theoretical physicists, and historiographers. These last make no claim to advancing the science itself; they press neither toward the arctic pole of the theory of functions nor toward the antarctic pole of algebra; they explore neither the steep surfaces of geometry nor the depths of differential equations. Their task is rather to draw up guides and charts, to indicate by what routes the results have been obtained, and what important points have been passed by without sufficient exploration. This work began with the History of Eudemus of Rhodes, B. C. 300, of which only a fragment has been preserved, just sufficient to excite lively regret for the loss of the whole. During the next two thousand years there were many bald chronicles of mathematics, but historiography as a science begins with Montucla. Notwithstanding the errors, unavoidable at that time, to be found in the two volumes of his *Histoire des mathématiques* (first edition, 1758; second edition, with two volumes by Lalande, 1799), Montucla "est encore et restera peut-être toujours un modèle que tout historiographe des sciences doit suivre." Kästner published four volumes of his *Geschichte der Mathematik* in the last four years of his life, 1796–1800. He has been alternately overpraised and depreciated; Gauss referred to him as the best poet among the mathematicians, the best mathematician among the poets of his day. His history is no real history—it is rather a catalogue raisonné—but it is nevertheless invaluable on account of its conscientious analysis of a number of works which, with their authors, would be otherwise absolutely unknown to us now. At about the same date, 1797–1799, there appeared the two volumes of Cossali's *Storia critica dell' algebra*, dealing exhaustively with the period 1200–1600; as



G-8. FORESTRY AND FISHERY EXHIBITS, NORTH END OF SECTION, CHAMP DE MARS.

regards Italy only it is true, but then during this period the Italian algebra was of importance far surpassing that of any other country. Cossali's labors for the elucidation of Leonard of Pisa and Cardan are of special merit.

Bossut published in 1810 his *Histoire des mathématiques*; in this he gives only rapid aperçus of the general development, interesting to those that know already, useless to those that need to learn. In the present century we have first Chasles, to whom the speaker paid a warm personal tribute. In his *Aperçu historique*, published in 1837, the notes, dealing with geometry, calculation, algebra, mechanics, which attain the dimensions of memoirs, form the model part of the volume, the text, the actual "Aperçu," being but a very condensed statement of the history of synthetic geometry. The other historical work of Chasles, the *Rapport sur les progrès de la géométrie* of 1870, is seriously affected by his ignorance of the German language. The years 1837-1841 saw the publication of Libri's *Histoire des sciences mathématiques en Italie*, from the earliest times up to the middle of the seventeenth century, a work which, owing to the author's admirable style, "se lit comme un roman, même dans les parties où elle n'en est pas un." Notwithstanding Libri's immense services in the study of manuscripts, his history is vitiated, as a historical work, by his misplaced patriotism; according to him all progress in mathematics is due to the Italians, with perhaps a few scattered French writers. When he finds an Italian in possession of any ideas or methods, no matter whence derived, he at once credits him with their discovery. In any case it is not possible to give any true idea of the history of mathematics by tracing it in one country only. If there is an international science it is mathematics; it bears no stamp of nationality. In considering the earliest times it is impossible to understand the course of mathematics in one country without following it in others also; to understand Greek mathematics we must know something of Egypt and Babylonia; the mathematics of the Arabs can not be explained without reference to Egypt, Greece, and India. After the invention of printing, so long as Latin was in use, mathematics had no country; and even when the frontiers were faintly marked by the use of different languages they were speedily obliterated for most mathematicians.

Passing rapidly over Gerhardt and Quetelet, with a few words of recognition, M. Cantor spoke of Nesselmann's *Die Algebra der Griechen*, 1842, "un chef d'œuvre digne d'être mis à côté de l'*Aperçu historique* de Chasles;" of Arneth's *Geschichte der reinen Mathematik*, 1852, which would have been an excellent book if the author had made a better apportionment of his space to his material—parts of the work "fourmillent de remarques aussi spirituelles que profondes;" of Hankel's posthumous fragment, 1876, "un torse d'une telle beauté qu'il eut été pitié de ne pas le mettre au grand jour;" and of the Prince Baldassare Boncompagni's disinterested labors on behalf of historiography. In this sketch he passed over many authors "tous aussi morts que leurs livres; gardons-nous de les ressusciter;" and avoided all mention of living authors for very obvious reason. He brought his address to a close by a forecast of the mode in which the history of more recent mathematics must be written. Regarding Lagrange as the founder of modern mathematics, this gives 1759 as the starting point; and from this year on the different subjects will have to be treated in special volumes. This, however, will be insufficient; the development of the lines of thought that run through all these different branches of mathematics must be traced in one final volume, *The History of Ideas*; difficult to write, certainly, but indispensable, for, as Jacobi said, "Mathematics is a science of which it is impossible to understand any one part without knowing all the others."

TROIS ANALYSTES ITALIENS; BETTI, BRIOSCHI, CASORATI.

[By V. Volterra.]

The scientific existence of Italy as a nation dates from a journey which Betti, Brioschi, and Casorati took together in the autumn of 1858, with the object of entering into relations with the foremost mathematicians of France and Germany. It is

to the teaching, labors, and devotion of these three, to their influence in the organization of advanced studies, to the friendly scientific relations that they instituted between Italy and foreign countries, that the existence of a school of analysts in Italy is due.

The extent of their joint influence, affecting minds of many diverse casts, is largely due to the differences in their natural faculties, in the circumstances of their lives, and in their acquired tendencies. Brioschi, "*toujours jeune par son caractère et toujours mûr par son esprit*," a Lombard by birth, was at first an engineer, but at an early age he acquired a profound knowledge of the classical mathematical works, and was called to the chair of mechanics at Pavia at the age of 25. He founded the Polytechnic School at Milan, and held the directorship until his death. In his capacity of senator he was active in public affairs. He found time to engage in public works and in engineering, and up to the last, as director of the *Annali di Matematica* and president of the *Accademia dei Lincei*, he was one of the leaders of the mathematical movement in Italy. A great contrast to this active life is offered by the calm existence of Betti. He was born in a mountain village in Tuscany. At 34 he became a professor in the University of Pisa, and at 41 director of the *Scuola normale superiore* of Pisa, whose organization is much like that of the *École normale supérieure* of Paris. He took no part in political movements. He loved scientific researches for their own sake exclusively, without regard to the results they might produce in the scientific world or to their importance in teaching. He did not care for publishing his researches, and even when he did undertake this he was apt to push it aside, attracted by new ideas. The knowledge that his intellectual conception could be realized was all-sufficient for him; he did not give himself the trouble of carrying it out in detail. When once he had obtained a clear vision of hidden truths, and had constructed in his own mind a system in which they proceeded directly from the simplest principles, "*tout était fait pour Betti*."

Casorati was born and lived at Pavia. He passed through the various grades in the university, where at the time of his death he was professor of infinitesimal analysis. He lived and worked almost exclusively for his pupils; all his works bear the stamp of the practical teacher, bent on elucidating some obscurity, correcting some error, expounding some theory. All his writings were in a definite relation to his university teaching. In his mind there was no distinction between the work of the savant and the work of the professor.

The fundamental differences in the three can be brought out most clearly by a comparison of their attitude toward the theory of functions. The development of this theory exhibits three well-marked periods corresponding to the three distinct phases that can be recognized in the history of any mathematical subject; these three phases, however, correspond also to three distinct modes of regarding questions in analysis, each of which has its advocates. In the first instance the discovery of facts is all-important and particular theories are elaborated. There are no uniform methods; every question is attacked on its own merits and methods are created as occasion arises; the ideas and results disengage themselves finally from long calculations. In the theory of functions this manifests itself in the heroic period, personified in Euler, Jacobi, Abel; and this manner of approaching questions is natural to Brioschi, the engineer and practical man, with his extraordinary gift for dealing with formidable calculations. He remained faithful to the classical method, never attracted by the second phase, which he even scorned somewhat. In this second phase ideas replace calculations; the philosophic spirit takes control and demands a general method including the whole subject in one body of doctrine. This desire found its fulfillment in the second period of the theory of functions, in the works of Cauchy, Weierstrass, and Riemann, who derive everything from the very sources of the fundamental conceptions. To this period belongs Betti the philosopher. His broad and cultivated mind loved philosophic systems; his Tuscan

indolence (which is not intellectual idleness) caused him to delight in meditation rather than in mechanical labor. Curiously enough, his name is associated with the theory of Weierstrass just as surely as with that of Riemann; his education had made him an algebraist while nature meant him for a physicist.

In the final period the theories find their appropriate applications, their most suitable forms; they are refined by criticism, and cast into a didactic mold. The name of Casorati, critic and teacher, is associated with this third phase. His work, *Teorica delle funzioni di variabili complesse*, has served more than any other one book to popularize in Italy the fundamental conceptions of the theory of functions, for the reason that, while reading it, difficulties disappear. The influence of this book is not confined to professed analysts; anyone attempting to trace the development of mathematics in Italy during this half century will find that analysts and pure geometers have influenced one another. For instance, the ideas of Riemann are at the foundation of many of the works of Italian geometers, and while the actual introduction of these ideas was due to Betti, it is this book of Casorati's that has carried them everywhere and attracted the attention of geometers.

This comparison of the work of these three analysts in the region that they had in common gives no idea, however, of the extent of the labors and influence of each one. For this it would be necessary to dwell on the work of Casorati, in the theory of differential equations, in analytical and infinitesimal geometry; of Betti in mathematical physics and algebra, he being one of the first to accept the new ideas of Galois; of Brioschi in mechanics, algebra, and geometry. The field in which Betti and Brioschi first obtained renown was in fact that of algebra; their names will always be associated with that of Kronecker as second only to Hermite in their work on the equation of the fifth degree, an equation whose complete solution was due to and secured immortality for M. Hermite.

DU RÔLE DE L'INTUITION ET DE LA LOGIQUE EN MATHÉMATIQUES.

[By H. Poincaré.]

It is obvious that there are two entirely different types of mind among mathematicians, manifesting themselves in two distinct methods of treating mathematical questions. Those of the first type are dominated by logic; those of the second are guided by intuition. They may be called analysts and geometers, though it is not really a question of the subject with which they deal; the analyst remains an analyst even when working at geometry, and the geometer employing himself on pure analysis is still a geometer. Nor is the distinction a mere matter of education. A man is born a mathematician; he does not become one; and either he is born an analyst or he is born a geometer. The two types of mind are equally necessary for the progress of the science; each has accomplished great things that would have been impossible to the other.

At first sight the ancients seem to have all been intuitionists, but this impression disappears on closer study. Euclid, for instance, was a logician, even though every stone of his edifice is due to intuition. The natural tendencies have not changed, only their manifestation. There has been an evolution, due to the increasing recognition of the fact that intuition can not give rigor, nor even certainty. A proof that relies on concrete images may be very deceptive. It was soon realized that rigor can not be expected in the demonstrations, unless it is to be found in the definitions. So long as the objects of reasoning were given simply by the bodily senses or the imagination there was no precise idea on which reasoning could be based. Thus the efforts of the logicians were concentrated on the definitions, one result of which is that mathematics has become arithmetized.

The question arises, is this evolution ended; have we at last attained to absolute rigor, or do we deceive ourselves as our fathers did? Philosophers tell us that it is

impossible to eliminate intuition altogether from our reasonings, for no science can spring from pure logic alone. To designate this other essential, we have no name but intuition; but this covers many different ideas. There is (1) the appeal to the bodily senses and to imagination; (2) generalization by induction; (3) the intuition of pure number; on this last a veritable mathematical method is based, while from the first two no certainty can be derived. The analysis of the present day constructs its demonstrations solely from syllogisms and this intuition of pure number. We may say that at last absolute rigor is attained.

The philosophers now object that what has been gained in rigor has been lost in actuality; the approach toward the logical ideal has been secured by cutting the ties with reality. For the sake of the demonstration a mathematical definition is substituted for the object, and it still remains to prove that the concrete reality answers to the definition. But as this is an experimental truth, it is not the business of mathematics to establish it. It is a great step forward to have separated these two things; nevertheless there is something in the philosophic objection. In becoming rigorous mathematics has assumed a certain character of artificiality; if it is clear how questions can be resolved it is no longer clear how and why they arise. We seek for reality, but this does not reside in the separate steps of the demonstration; it must be sought rather in the something that makes for unity. The microscopic examination of an elephant gives no idea of the animal itself; the fairy-like structure of silicious needles, which is all that is left of certain sponges, can not be understood without reference to the living sponge by which this form was imposed on the siliceous particles. Logic by itself can not give the view of the whole, which is indispensable alike to the inventor and to him who desires really to understand the inventor. Logic, which alone gives certainty, is simply the instrument of demonstration; the instrument of discovery is intuition.

But analysts also are inventors; hence they can not always be proceeding from the general to the particular, as the rules of formal logic demand, for scientific conquests are made only by generalization. There is, however, a perfectly rigorous process, that of mathematical induction, by which it is possible to pass from the particular to the general.¹ For the profitable use of this, to recognize the analogies whose presence makes it applicable, the analyst must have the direct feeling for the unity of an argument, for its soul and spirit; for him the most abstract entities must be living beings. What is this but intuition? This, however, does not invalidate the distinction already drawn, for it is an intuition entirely different in nature from the sensible intuition founded in imagination alone, even though psychologists may finally pronounce it also to have a sensual foundation. It is the intuition of pure logical form, which together with the intuition of pure number makes not only demonstration, but also discovery possible to the analyst. Thus among the analysts inventors do exist, but not many; it remains true that the most usual instrument of invention in mathematics is sensible intuition.

CONGRESS OF APPLIED MECHANICS.

The work of this congress lasted from the 19th of July to the 25th, and was divided into nine principal questions, which were fully discussed:

1. Organization of machine shops, and, in particular, of shops for machine construction.—Distribution of space, work, tools; outfitting; machine tools; interchanging; motor power; transmission; receiving materials; factory work; verifying;

¹Poincaré, "Sur la nature du raisonnement mathématique" *Revue de métaphysique et de morale*, vol. 2 (1894), pp. 371-384.

setting up; trials; packing and delivery.—Economic organization; organization of labor.—Monographs of well-installed shops are desired.

2. Machine laboratories.—Equipment, installation, methods of trials of machines; monographs of laboratories in actual work.

3. Mechanical applications of electricity.

4. Transmission.—Lifting and transport apparatus.—Long distance; in workshops; engagements; changes and reversals of speed; cranes, sheers, rolling platforms, lifts, etc.; factory railways; cable ways; air lines; floating chains, etc.

5. Hydraulic motors.—New types of turbines and wheels; construction, force rendered, applications.

6. Boilers.—Progress in boilers à petits éléments since the congress of 1889 (boilers à très petits éléments existed then only in embryonic state); setting up, circulation, results, safety, uses.

7. Rapid rotatory steam engines and steam turbines.—Construction, working, tending, results, uses.

8. Thermic heat motors.—Gas, heavy oils, naphtha, carbonic acid, etc.; construction, applications, results.

9. Mechanics of automobile carriages.—The rapid development of the automobile industry has brought forward problems whose solution interests the entire field of mechanics; light and rapid motors; special transmission; new parts, such as pneumatic tires, broken axles, ball bearings, etc.

REPORT ON THE CONGRESS OF MEDICINE.

By Dr. LUCY HALL-BROWN, *United States Delegate.*

The thirteenth international congress of medicine opened August 2 in the Salle des Fêtes. President Loubet was to have opened this congress in person, but owing to the death of the King of Italy he was not present. Professor Lannelongue, president of the congress, was the first speaker. He was followed by Dr. von Bergmann, of Germany; Dr. Albert, of Austria; Dr. Preisz, of Hungary; Surgeon-General Sternberg, of the United States; Sir William MacCormac, of Great Britain, and Professor Virchow, of Berlin.

This congress was unwieldy in its proportions. It was so large that no general banquet was attempted, and even the great palace of the Luxembourg was dangerously overcrowded at the magnificent reception given by the ladies of the reception committee.

I was allied with the section of gynecology, where I heard important papers by Winckel, of Munich; Pozzi, of Paris, and many other distinguished men. A Russian-American woman, Dr. Rabinovitch, of New York, read a paper in the section on psychiatria.

The work of the congress was earnest and arduous, and closed in almost a frenzy of enthusiasm on August 9.

I want to speak here especially of the excellent arrangements made by the ladies' committee. This committee of ladies had fitted up in magnificent style a suite of rooms in the Faculté de Médecine, where the ladies of the congress could receive information, meet their acquaintances, or write their letters. There were facilities for resting

and for lunching. It was by far the most perfect arrangement of the kind that I have ever seen.

The reception given to the congress by the President of the Republic at the Palais d'Élysée was magnificently carried out.

REPORT ON THE CONGRESS OF PROFESSIONAL MEDICINE AND MEDICAL DEONTOLOGY.

By ALFRED J. OSTHEIMER, Jr., M. D., *United States Delegate.*

This congress, the first of its kind, was inaugurated on the 23d of July, 1900, and its sessions continued, morning and afternoon, until July 28, 1900, under the presidency of Dr. Lereboullet and the secretaryship of Dr. Glover, both of Paris. The discussions were divided into four sections:

1. The physician's relations with mutual aid societies and insurance companies.
2. The physician's relations with his patients and the public in general.
3. The physician's relations with his colleagues.
4. The physician in relation to the formation of means of mutual professional defense and assistance.

These questions were all freely discussed, and resolutions were passed with a view toward the establishment of more ideal conditions for the medical man. An international committee was appointed to deal with questions of professional medicine and deontology, as well as to prepare the work of the next congress. Though the names of Dr. G. H. Simmons, of Chicago, and Dr. H. S. Fuller, of Hartford, are printed in the general circular as members of the national committee of the United States, as far as I know there were no Americans in attendance during the congress besides myself.

It was decided that the next congress of professional medicine and medical deontology should be held in Belgium in 1903.

REPORT ON THE CONGRESS OF THE MEDICAL PRESS.

By ALFRED J. OSTHEIMER, Jr., M. D., *United States Delegate.*

The first international congress of the medical press was convend in the press building in the Exposition grounds on the 26th of July and lasted until the 28th of July, 1900. The interest in the inauguration was increased by the presence of Professor Virchow, who made a brief address in French on the opportunity and necessity of forming an international association of the medical press. This subject, the question of the protection of medical literature, and the special deontology of the medical press, were discussed during the following two days. The history of the events which led up to the formation of an International Medical Press Association were reviewed by Dr. Laborde, president of the Association of the Medical Press of France. He also

presented a provisional constitution and by-laws for an international association.

The aim of the association, as expressed by Dr. Posner, of Berlin, is:

1. To cultivate friendly relations between the medical press of the different countries.
2. To represent the common interests of the medical press in each country (the protection of intellectual property, the exchange of journals and reviews, the drawing of identical reports, etc.).
3. To select an executive committee composed of members from the different countries, whose duties will include the formation of permanent rules and regulations and the encouragement of the foundation of national associations of the medical press in countries in which they do not exist.

The congress voted the formation of an international association of the medical press, and the officers of the congress even elected a committee, which, with the aid of the representatives of the national association of each country, should form a temporary constitution. It was decided to hold the next congress in 1901, in Brussels, where a permanent constitution will be adopted.

The United States organization committee was composed of representatives of the Association of American Medical Editors, of the American Medical Publishers' Association, and of the Medical Press Club of the Mississippi Valley. As far as I know, the only other American in attendance was Dr. Charles W. Fasset, of St. Joseph, Mo., who read a paper on "The condition of medical journalism in the United States."

REPORT ON THE CONGRESS OF MERCHANT MARINE.

By J. A. OCKERSON,

Member of the Mississippi River Commission.

As United States delegate to the international congress of merchant marine, I have the honor to make the following report:

The congress was convened in Paris on August 4 and adjourned on August 12, 1900. It was divided into five sections, to consider such matters as came before them, and especially set forth in the following series of questions:

FIRST SECTION—GENERAL AND STATISTICAL.

1. What is the condition of the merchant marine of each country? This was discussed with reference to the change in number, tonnage, and speed of ships.
2. What is the nature of the different organizations of the merchant marine and their respective rôles? This included the scope of the commander's authority, the recruiting and discipline of seamen, and that relating to the cleanliness and safety of the ship.
3. What is the condition of shipyards and naval construction, with special reference to the production of the last thirty years, variation of salaries, and cost of raw materials?

4. What are the relations between the established movements of a maritime port and the railways, canals, and rivers connecting with the same, giving the net cost and conditions of transportation by the different routes and the relations between railways and inland navigation?

5. What are the various regulations for the protection and encouragement of the merchant marine—navigation reserved to the national colors, bounties on construction, navigation, and speed; favors given to ships of national construction; exemptions and reimbursements of certain rights; subsidies to postal lines and regular packet lines?

6. What are the relations between the merchant marine and the Navy—military obligations; utilization of merchant ships as cruisers, lookout ships, and transports; bounties especially accorded a man-of-war; summons of ships?

SECOND SECTION—CUSTOM-HOUSE AND REVENUE.

1. What influences do custom-house regulations exert on the merchant marine?

2. What is the character of the organizations of free ports and free zones, and what influence do these have on the merchant marine?

3. What have been the fluctuations in freights during past given number of years, and what have been the principal causes of these fluctuations, with special reference to the effect of maritime taxes, national and local?

4. How can we attain uniformity in the matter of gauging ships, showing different methods of gauging and the attempts at measuring tonnage?

THIRD SECTION—SECTION OF TECHNICAL NAVIGATION.

1. What modifications are necessary to bring about the necessary international regulation for the prevention of collisions—improvements in signals, lights, and maneuvers; determination of moderate speeds; small craft and salvage devices; legal character to give to article 9 of the international regulations; obligatory routes at sea for the great maritime lines of traffic?

2. Should the load line of vessels be the subject of international agreement?

3. What international regulations should be made to insure greater security to navigation—study of ocean currents; destruction of floating wrecks; movement of icebergs; meteorological stations, marine and pilot charts, wireless telegraphy, carrier pigeons, lights and beacons for coasts and dangerous shoals; obligations in rendering assistance at sea?

FOURTH SECTION—MARITIME IMPROVEMENTS.

1. What improvements should be made to bring materials to a point of higher commercial utility—hulls, engines, boilers, divers motors, installations on shore; fuels, such as coal, petroleum, wood, etc.; supply depots?

2. What is the condition of the crews as to salaries and returning them to their home ports, with special reference to the employment of negroes and roustabouts?

3. What are the different classes of maritime brokerage—regulations, monopolies, responsibilities, tariffs?

4. What reforms are needed to bring about regulations concerning pilotage and towing—capacity and employment of pilots, responsibility, establishment and application of charges?

5. What steps should be taken for the improvement, development, neutralization, and security of submarine cables?

FIFTH SECTION—ASSISTANCE TO THE SEAFARING MEN.

1. What steps should be taken to improve the material and moral conditions of sailors—aid for shipwrecked sailors and their families; sailors' homes; libraries; gratuitous employment agencies; various employments for protection and instruction?

2. What are the best methods for the organization of savings banks, the promotion of economy and relief by mutual insurance—rôle of the state in the organization of such institutions; results to be attained by private enterprise?

3. What are the best hospital arrangements and what should be done to improve the health of the marines—land hospitals, floating hospitals, management on shore; various hygienic measures?

These and other topics were discussed at the meetings of the several sections, which were quite well attended. A very large proportion of those in attendance were residents of France.

At the last session held all of the sections were brought together into a general meeting, and the answers to the questions that had been agreed to by the sections were discussed. As a result of these discussions certain general conclusions were formulated by the congress, as follows:

GENERAL CONCLUSIONS. FIRST SECTION—GENERAL AND STATISTICAL SECTION.

It considers that the interior water traffic is an essential element, indispensable to the commerce of to-day, to industry, agriculture, and beneficial to a high very degree to the merchant marine and the prosperity of the ports.

That, on the other hand, experience has demonstrated that, far from being prejudicial to the railroads, the augmentation of the traffic of the latter is in constant progress everywhere that the water traffic has gained in prosperity.

We therefore heartily approve of the efforts being made by the various governments to improve the network of the interior navigation.

While great improvements are in progress tending to diminish the manual labor pertaining to the construction and operation of the commercial fleet, we are still solicitous for the welfare of the workmen and their families, and deprecate any diminution of wages, and urge such cordial relations between ship owners and builders and their employees as will prove mutually beneficial.

SECOND SECTION—CUSTOM-HOUSE AND REVENUE SECTION.

There should be no prohibitive custom-house regulations which would be inimical to the interests of the merchant marine, the prosperity of this marine being in direct proportion to the diminution of the obstacles of custom-houses and exaggerated tariffs.

We approve of the system of free ports and free zones, which naturally exercises an influence very favorable to commerce and the merchant marine.

After having expressed our desire for the establishment of free ports, we commend the words of our secretary of the navy at the opening of this congress, stating the advantages which exist in Germany, Belgium, Italy, Spain, and other countries in consequence of their franchises and other privileges allowed by administrations.

In the meantime, while waiting for the desired organization of free ports, the governments should empower the chambers of commerce, municipalities, and other corporations interested to establish free depots or special warehouses in which products could be worked or mixed before being exported.

The congress is of the opinion that the maritime taxes, national and local, increases the freight and might reduce the amount of transportation. The freight depends on supply and demand. The actual falling off arises because the commerce of the world does not increase in proportion to the construction of ships. Political commotions and wars will cause a temporary increase of freight, followed by a period of depression.

THIRD SECTION—SECTION OF TECHNICAL NAVIGATION.

That the maritime nations adopt a uniform classification of lights, which should be divided into fixed lights, lights of occultations, flash lights, mixed lights.

The effective luminous power of the lights should be registered on the lists of the light-houses and expressed numerically in such a way as to show clearly the relations between them.

The tables of the light-houses should indicate luminous power according to the condition of the atmosphere.

Instead of indicating a geographical limit of view for a fixed altitude of the observer the tables of the light-houses should give the means for computing same to the true altitude of the observer, which changes from one ship to another and according to the condition of the tide, and that these tables should give the altitude, above the highest seas, of the focal plane and the top of the light-house buildings.

The adopted rules at the conference in Washington prescribe a uniform method for the buoys and beacons which are being established by the various maritime nations, as they have been already in France and partly in Great Britain.

That the maritime nations adopt a uniform type of a table of meteorological observations to be filled out by the navigators.

That the maritime nations agree to uniform signals warning the navigators of coming tempests.

That studies should be made to ascertain within what limits it is necessary to make the use of the second light on the mast obligatory and how far it is really useful to steamships, keeping in view on the one hand the advantages that this second light has for the larger ships, and on the other hand the difficulty of applying it to the smaller ships and to vessels having only one mast.

That the orders of article 15 of the regulations, imposing the obligation of a certain minimum power of phonic signals, to be complete should provide means of verification by comparison with standard instruments.

That the maritime countries should adopt a uniform system of commands given to the man at the wheel.

That every vessel should be obliged to modify her course whenever she gets in the presence of a group of not less than three vessels navigating together, which make themselves known by special signals.

That the maritime nations come to an international understanding at an early date for the regulation of lights of fishing boats.

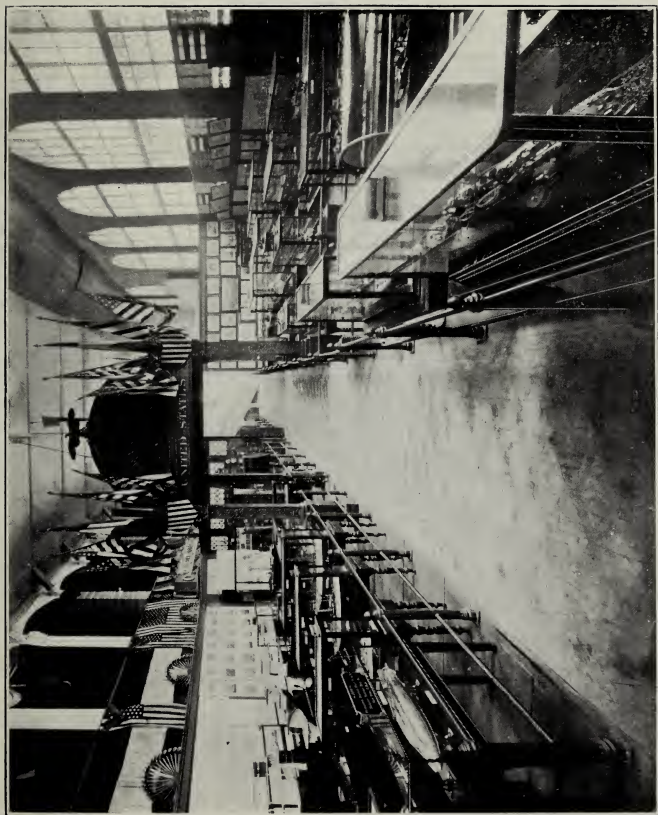
That the administration of the navy of the various maritime countries make a more efficient effort to impose the salvage equipage placed on shipboard of various vessels.

That the use of oil by flowing or oozing, in case of high seas, be made general.

That the exterior rough gauge be adopted as the international base of gauging, and that France take the initiative in this reform.

That the reason is, that on one hand the consideration of the degree of submergence of a vessel aims at only one of the elements, and not the most important one, of security; on the other hand, no procedure is actually known which permits accounting for a degree of stability of a vessel loaded without complications and loss of time consistent with the requirements of commerce. It is not necessary to recommend, as assuring the security of the navigators, an international regulation tending to make obligatory, according to uniform rules, the line of the maximum cargo of vessels of commerce.

Also, and in case they should not accede to the preceding proposition, that it would not be proper to go beyond the obligation imposed upon shipowners to indicate themselves, on their own responsibility, the line of cargo not to be exceeded; that it is desired that such studies should be made as would permit the ready determination of the stability of a loaded vessel, practical and conformable to the neces-



UNITED STATES NAVAL EXHIBIT, GROUP XVIII, CENTRAL AISLE AND PAVILION CROSSING IT.

sities of commerce; that in view of this the governments and navigation companies should find practical means to establish by simple experience, after calculations made during the course of construction of each vessel, a ready reference, giving the condition of stability of each of the principal hypothesis possible of the cargo.

That the destruction of floating wrecks be the subject of an international understanding.

That the maritime nations agree to forbid the navigation, under the sanction of the repressive laws enacted by each government, certain defined zones devoted to fishing.

That in the meantime a private understanding be had by the various navigation companies to establish in regard to this a service regulation which each company should impose upon their captains.

That the navigation companies unite their efforts to facilitate the experiments and inquiries tending to render the wireless telegraphy applicable to commercial navigation.

That they create without delay a permanent international maritime office, with the view of studying all technical improvements, regulations, and methods which will tend to reduce as far as possible the number and gravity of disasters at sea. The projects of uniform regulations elaborated by this office should be submitted from time to time to an international diplomatic conference, which should decide on the merits of the proposed regulations and recommend to their respective countries the enactment of such laws as would make them effective.

That a diplomatic conference should study the creation of international maritime courts to pass on the various maritime questions affecting the subjects of various nationalities.

FOURTH SECTION—MARITIME IMPROVEMENTS.

That steam pilotage should be gradually substituted for sail pilotage.

That the government should favor the development of submarine telegraphic network by liberal means in the shape of concessions and by encouragement to private parties.

That the ports where coal is supplied by lighters that do not permit of verifying the weight should adopt uniform methods of verification similar to that in use at Port Said.

FIFTH SECTION—ASSISTANCE TO THE SEAFARING MEN.

That within the principal ports of commerce of the entire world there should be created by a special law for each country an office for seafaring people, open to marines of all nationalities, and having for its object the obtaining gratuitously the means of embarkment, and give them such immediate advice and help as they are in need of.

That everywhere that private initiative has not founded "homes for marines" the maritime powers should come to an understanding with the municipalities to create such homes within all the commercial ports where ships are fitted out.

That within all the countries authorization be given to exercise the profession of "maritime employment agency" only to persons of good moral character and honesty. These agencies should be prohibited from operating at the same time such professions as furnished rooms, restaurants, cafés, and general merchandise.

That the securing of sailors by "crimps" (or procurers of men), which occurs particularly in Oregon, be positively repressed by international regulations, and that this question be submitted to the next international conference.

That the countries, municipalities, and syndicates encourage by all proper means the works of moral assistance to the marines. They should be provided with halls for lectures, amusements, and libraries within the ports; loaning of books on ship-board, and sending money to their families free of charge should be carried into practical effect.

That within all countries where they have a merchant marine a regulation should be made to fix the "ration of marines," in quantity, quality, and hygienic conditions. The necessary sanctions for this regulation should also be adopted.

That the ships should be obliged to carry a quantity of subsistence stores in proportion to the duration of the probable maximum length of their trip.

That within all the large commercial ports there should be organized a mechanical course and courses of hydrography, absolutely free, such as exist already in many countries, and that the young men who have a desire to enter the profession of machinists on shipboard of the merchant marine be provided, after examination, with a special diploma of a machinist student of the merchant marine.

That it be understood between the various nations, which send ships to the fishing grounds of Newfoundland or Iceland that an international hospital ship, fully equipped, be stationed within the boundaries of the fishing grounds and that the expenses be borne by the various interested nations either collectively or alternately.

That concerning the quarters and hygienic conditions of the outfit the latest improvements be applied to all new constructions.

That graduate machinists be requested to become members of inspecting commissions for steamships and be specially charged with the examinations involving damages to hulls, machinery, boilers, etc.

That the countries endeavor by all means, without interfering with the legal limitations of their responsibilities, to lighten the risks borne by all seafaring people and small owners of vessels.

It will be seen that the topics adopted for discussion covered a very wide range in a field of great interest to all maritime powers. The conclusions agreed upon do not cover all of the questions raised, but will doubtless prove of value as representing the best judgment of a large body of intelligent men well versed in all that pertains to the merchant marine.

The proceedings of the congress will probably be published in full in French.

The commission of organization, under its distinguished president, Jules Charles Roux, deserves great credit for the excellent manner in which the work of the congress was carried out.

THE INTERNATIONAL CONGRESS OF MILLERS AND MILLING.

The international congress of millers and milling met in Paris on the 9th, 10th, and 11th of August. The congress was well attended, nearly all European countries being represented. The programme was substantially as follows:

1. Milling, past and present: General statistics—Production and consumption of meal and flour.
2. The wheat of the present compared with that formerly grown: Yield and nutritive value—Its progress or deterioration.
3. Processes of grinding: Stone and metal mill stones—Influence of systems on the yield and quality of flour.
4. The establishment of mills and their dependencies: Ancient and modern mills—Motor power; wind, water, steam, electricity, precaution against fire and accident—Conditions necessary to make a modern mill.
5. Preparation of wheat for grinding: Thrashing and winnowing.
6. Bolting of flour: Circular bolts—Flat bolts—Comparison and results.
7. Products of the grinding: Their classification—Different kinds of flour—Advantages and inconveniences of their multiplicity—Customs in the different countries—Analyses of flour.

8. Organization of work in mills: Day and night work—Hygiene.
9. Personnel of milling force: Directors, employees, workmen—Salary—Accidents of work—Diffusion of destruction—Societies of mutual aid, etc.
10. Conditions of buying and selling: Custom regulations in various countries.
11. Relations of millers with the growers of wheat: Grain merchants and brokers in wheat.
12. Transport of wheat and flour: Various methods of shipment; by rail and by water—Study of the national and international tariffs.
13. Location of mills: Respective duties of proprietors and tenants.
14. Water courses: Rights and duties of manufacturers who use water power—Cleaning of rivers—Legislation on the subject.
15. Association of millers: Relations between them—Publications and statistics.

THE CONGRESS OF MUSIC.

The congress of music met on the 14th of June and held four sessions, extending through the 18th of June. M. Theodore Dubois, the director of the National Conservatory of Music, was the president of the board of organization.

During its meetings the congress confined their deliberations chiefly to the consideration of eleven subjects:

1. The general use of a normal diapason and measures to render it obligatory.
2. Transformation of those instruments called simple instruments into chromatic instruments. Definition of chromatic instruments.
3. What is the use of employing the actual note in musical script?
4. The employment of a distinctive sign accompanying the bass or treble clefs in vocal or instrumental scores for the parts contained in the octave.
5. Unification of the terms of composers in editing their music.
6. To regulate metronomic apparatus.
7. Usefulness of a system to register the movements of musical works.
8. Unification of the orchestration of harmonies and fanfares.
9. Would it be beneficial to reorganize the system of musical leadership; and, if so, what are the best practical means to bring this about?
10. Usefulness of schools for orchestral leaders and the spreading of a general knowledge of instrumentation.
11. Benefits of developing choral, harmony, and symphony societies.

PROCEEDINGS OF THE EIGHTH INTERNATIONAL CONGRESS OF NAVIGATION.

OFFICIAL REPORT OF THE UNITED STATES DELEGATES TO THE SECRETARY OF THE NAVY, HERE PUBLISHED BY PERMISSION.

The congress met at 2 p. m. July 28, under the presidency of Mr. Pierre Baudin, minister of public works, assisted by Messrs. Holtz and Massou, presidents of the congress, the general secretary, Mr. Pavie, and nearly all the official delegates from foreign countries, as well as a large number of unofficial members. The list of official delegates is forwarded with the papers relating to the congress.

The minister of public works welcomed the representatives of

foreign powers, who came, as he said, "to exchange with us expressions of cordiality, and associate themselves with us in the great manifestation of human energy, in which France has taken the initiative."

The minister added:

This congress might have been held elsewhere than at Paris, but at the time when the flags of all nations are floating on the banks of the Seine, you should be there. You should be because you are not strangers to the gigantic work that is the result of the united efforts of the world. You are the representatives of the corporations which in all times display the flags of all nations and unite them in all our ports.

But it is not a manifestation which the members of the congress are interested in, for it is the tradition of this congress to exhibit a very considerable amount of work. Your reports reflect the general ideas which terminate our century, and I would only cite the general lines of two which are of the nature to excite the enthusiasm of all. They bear on the natural defense of man against death and against misery.

The first refers to the great services rendered by light-houses. It is perhaps here that the engineers have accomplished their mission with the greatest success, and that with an expenditure which is out of all proportion to the scientific results attained. In this work France has taken her place in the first rank, and she will maintain it with the successors of the illustrious Bourdelle.

You will not, however, I am sure, neglect any part of the mission to which you have set yourselves. Commercial navigation is not only carried on by eminent technicians and great commercial geniuses, but it employs an innumerable army of workers.

Gentlemen, Paris welcomes you, and rejoices that she will retain you for a number of days, and France thanks you for having contributed to the success of a manifestation of peace and labor.

The address of the minister of public works was followed by a short address from the president of the congress, Mr. Couvreur, and he in turn was followed by the following speakers, representing the delegations from the various countries: (1) Mr. Schultz, Germany; (2) Mr. Russ, Austria; (3) Mr. Helleputte, Belgium; (4) Mr. Csorgeo, Hungary; (5) Mr. Conrad, Holland, and (6) Mr. Timoneff, Russia.

Each one of the ministers thanked the president of public works and the president and secretary of organization of the congress for the opportunity that had been offered them to exchange ideas with so many distinguished foreigners, and expressed their high appreciation of the value of international discussion on questions concerning navigation.

The congress was forthwith organized, and presidents, secretaries, and vice-presidents appointed to preside over each of the four sections into which the congress was divided.

The congress adjourned at 4 p. m., to meet the following day.

At 5 p. m., July 28, all of the delegates and members of the congress were received by the president and members of the chamber of commerce of Paris in the reception rooms of the chamber of commerce. Mr. Moisant, president of the chamber, made a short speech, in which he welcomed the foreign delegates and thanked them for the participation which they had taken in the work of the congress.

For the following day, Sunday, the committee of organization had organized three excursions, as follows:

1. From Paris to Douai, leaving Paris at 8.30 a. m. and returning at 10.40 p. m. A banquet was offered at the Hotel de Ville by the municipality of Douai at noon.

A visit to the docks and general storehouses of Douai and the installation of electric traction on the Scarpe.

A dinner at the railway station at Amiens.

This excursion was limited to the first 100 persons who inscribed their names and paid the required amount—35 francs.

2. Excursion from Vernon to Rouen, 7 a. m. to midnight.

Breakfast on board one of the boats of the Central Parisian Company.

A visit to the barrage of Poses.

Visit to the port and docks of Rouen.

Banquet at the Hotel de Ville by the municipality and chamber of commerce at Rouen, 7 p. m.

Number limited to 100, price 25 francs.

3. Excursion from Rouen to Havre, 7 a. m. to midnight.

Breakfast on board the *Félix Faure*, one of the boats belonging to the Ferry Company of Rouen.

Visit to the port and docks of Havre.

Banquet at the Hotel de Ville by the municipality and chamber of commerce at Havre.

Number limited to 175, price 35 francs.

These excursions were particularly interesting to the numerous engineers concerned in the management of canals and in the improvement of rivers.

At 10 a. m., July 30, the members of the congress, forming part of the special committee (commission d'étude) appointed by the eighth international congress, met for the purpose of elaborating a project for the permanent organization of international congresses of navigation. Their report was presented at the last full meeting of the congress.

At 2 p. m. of the same day the four sections of the congress met in the halls that had been assigned to them. Members were, of course, free to attend discussions in any of the sections, which were divided into subjects so that engineers interested in any particular subject could follow practically all the discussions. The United States delegates forming the board appointed by the Navy Department were divided among the four sections as circumstances required. The lists forwarded with the papers concerning the congress show the official delegates who acted as presidents and vice-presidents of the bureau of the congress, and as presidents and vice-presidents of the different sections. The meetings of the four sections were confined to the afternoons of July 30 and 31, and August 1 and 2.

The proceedings of the first section were as follows:

MONDAY, JULY 30.—The section met in the main hall of the palace of congresses and copies of additional papers which had not been presented in the first distribution were handed to the members. The section discussed the first and second questions, each of which contains a number of papers, as follows:

First paper.—"Influence of training works on the régime of streams and rivers," by H. Bindemann, königl. Wasserbau-Inspector at Charlottenburg. A summary of this paper was presented in German, and was not commented on.

In this Congress the three official languages were French, English, and German, consequently authors were allowed to read their papers in any one of these languages, or speak in any one of them, and regular translators gave abstracts of the remarks in English, or in German, or both, if it were necessary, i. e., if a number of delegates requested it.

Second paper.—"Influence of the training works of the Scheldt on the régime of that river," by Mr. Grenier, principal engineer of the "Ponts et Chaussées" at Ghent. This paper was not read, but a few remarks in explanation were made by the author, and briefly answered by the president of the section.

Third paper.—"Influence of training works on the régime of the Meuse and the lower Ourthe," by Messrs. E. Jacquemin and E. Marote, engineers of the "Ponts et Chaussées, at Liege. This paper was not read, but the salient points were briefly summarized by the author.

Fourth paper.—"Influence of training works on the régime of rivers," by Mr. Antoine Robert, engineer of "Ponts et Chaussées" at Angers. This paper presented, but not read or discussed.

Fifth paper.—"Influence des travaux de régularisation sur le régime des cours d'eau en Hongrie," by Mr. De Kvassay, conseiller ministériel, chef de la direction nationale des eaux au Ministère royal hongrois de l'agriculture. This paper was not read, but the author answered queries put by several delegates on various questions concerning improvements in the navigation of the Danube, and concerning the reclamation of waste lands bordering on the river. Many of these questions seemed to imply that the methods proposed by the author might be generally applicable to France, and the author's explanation tended to show that the conditions were so different that methods applicable to the Danube could seldom be used on the French rivers.

Sixth paper.—"The influence of river improvements on inundations in the Netherlands," by Mr. M. R. P. J. Tutein Nolthenius, of the Royal Corps of Waterstaat Engineers, at Zutphen. This paper was briefly presented by the author, but not discussed beyond a few questions concerning details.

Seventh paper.—"Training of large rivers by the mechanical dredging of channels and attraction of the waters," by Mr. V. E. De Timonoff, professor at the Engineering Institute of Ways of Communication at St. Petersburg, manager of the ways of communication in the St. Petersburg region. This important paper was transferred from the first to the second section. It was briefly summarized by the author in French, and was well received. The discussion of this paper was postponed until the following day.

The section here adjourned to meet on the afternoon of July 31.

TUESDAY, JULY 31.—The first section met at 2 p. m., and proceeded with the discussion of Mr. De Timonoff's paper. This paper was the only one under discussion during the entire session of the day, and it was apparent that it had received careful consideration from a large number of delegates. A number of delegates requested permission to reply or discuss the paper, but the limited time would not permit the president to grant this to all of them.

Mr. De Timonoff was called upon by the president for certain explanations concerning the paper, and he was replied to by Meesrs. Flamond, Conrad, the president,

Mengin-Lecreulx, Debreil, and several others. The language used was principally French, though Mr. Flamond spoke in German. The discussions were taken down by official stenographers, and will be published, in full or in abstracts, with the official proceedings of the congress.

The section adjourned at 4.50 to meet the following day.

WEDNESDAY, AUGUST 1.—The session opened at 2 p. m., and, after some introductory remarks by the president, the discussion of the paper by Mr. De Timonoff was resumed and was carried on for half an hour by three speakers.

Eighth paper.—"Progres de la mecanique a l'alimentation des canaux," by Mr. Schulte, Konigl, wasserbau-inspector, Munster-en-Westphalie. Was briefly discussed by the author, but not discussed beyond a few remarks by the president.

The next paper was read from manuscript, the subject being "Recent work on the Tiber River, the removal of obstruction, the demolition of a bridge, and other work resulting in the widening of the navigable portion of the river, near Rome, from 58 to 100 meters." This was given in considerable detail. There was no general discussion beyond a few remarks by the president and two other members.

Ninth paper.—"Progress in mechanical methods of supplying water to canals," by Mr. F. Galliot, chief engineer of "Ponts et Chaussées," Dijon, was read and discussed by the author. It was very warmly received, but was not the subject of any considerable discussion, a few members asking supplementary information concerning details.

THURSDAY, AUGUST 2, 10 a. m.—At this session the entire congress was reunited in the main hall to witness the stereopticon illustrations of Mr. Ockerson's paper on the Mississippi River. The hall was darkened for the purpose, and the illustrations were very successful, were witnessed with perfect attention, and were very well received. Mr. Ockerson explained each one of the views in English, and it was immediately repeated by the French translator. The congress adjourned to meet in sections at 2 p. m.

At 2.30 p. m. the first section assembled, and the session opened by a discussion of the Mississippi River work by Major Millis. A paper was also submitted discussing that of Mr. De Timonoff.

The general conclusions were submitted by a subcommittee, were read in French, and afterwards translated into German. The conclusions were discussed by the section, and, after considerable amendment, were adopted.

These conclusions of the different sections were submitted to the entire congress on the last day's session, and there voted on.

SECOND SECTION.

This section discussed the third, fourth, and fifth questions.

Mr. Lainey, member of the chamber of Paris, presided, and after some discussion it was decided to take up the fifth question, but finding that the authors were not ready at this time, the papers were taken in the following order:

First paper.—"Utilization of natural navigable waterways of slight depth beyond their maritime portion," by Mr. Albert Wahl, chief naval engineer detached to the colonial ministry. The paper was read by the author, and in the discussion which followed it was remarked that the author had omitted to mention the turbine system. One of the vice-presidents called on a representative of a German firm, who regretted being unable to give particulars as to the efficiency of turbine steamers. Other members of the congress supplied some data concerning these steamers.

After this paper the following motion was put:

"Resolved, That the second section of the congress desires information concerning the results of experiments with new forms of propulsion, especially turbines."

Second paper.—Mr. Kretsch read a paper on an apparatus to facilitate the naviga-

tion of rivers by lighters. The paper is not among the printed and distributed reports.

The order of the day was then announced by the president, as follows: Tuesday afternoon, consideration of the fourth question, which will be continued also on Wednesday afternoon. The session adjourned at 4 p. m. to meet at 2 p. m. on Tuesday.

TUESDAY, JULY 31, 2 p. m.—The president read off a list of the papers that had been read at the previous session, and the section proceeded with the consideration of the following papers:

Third paper.—"Experiments made with tugs on the Channel of the Gates of Iron," by Mr. Aloys Hoszpotzky, department councillor to the royal minister of commerce of Hungary. This paper was read in German by the author, and a brief summary was given in French by Mr. Schromm, of Austria, who also commented on the paper. Mr. Stephanescoff, of Hungary, also made a few remarks in protest against the supposed importance of the improvements at the mouth of the Danube. The author replied in German, giving an explanation of the manner of handling Danube tugs. Mr. Stephanescoff made a brief reply. A member of the congress asked information concerning the tugs used in certain towing experiments on the Danube.

Fourth paper.—"Resistance of boats under traction," by Mr. Hubert Engels, geheimer hofrath and professor at the higher technical school, Dresden. The paper was read in German by the author, and a brief summary given by the translator in French. Mr. Engels believed that towing trials with models were extremely beneficial and that they accord with the results obtained with full-sized vessels with sufficient accuracy, the differences in results being probably due more to the irregularity of the banks of the canal than to any other reasons. The paper was remarked on by Mr. De Mas, who thanked the author for the information conveyed, and suggested that measures be taken to carry out experiments as to the resistance of one or more boats being towed in line. The author replied in German, but his remarks were not translated.

Fifth paper.—"Effects of navigation upon the bottom and banks of the Dortmund-Ems Canal," by Mr. F. Thiele, Konigl. Baurath, at Breslau. This paper was read by the author and briefly commented on by Mr. De Mas.

Sixth paper.—"On the resistance of boats as used for inland navigation," by Mr. G. Rota, chief engineer of the "Genio navale," at Rome, was read by the author and was extensively discussed, as the experiments of the author gave results directly opposed to those of other experimenters.

Mr. De Mas explained that his experiments were completely at variance with those of Mr. Rota. The two experimenters differed completely as to whether perpendicular or sloping sides to canals offered the greater resistance to traction. Remarks were made on this paper by Messrs. Thiele, Sympher, and again by Mr. De Mas. Although no conclusion was arrived at, it was suggested that in all probability the difference in model experiments with perpendicular and sloping sides and actual experiments with the same cross-section of canal were due to differences in the surfaces of the sides. It was pointed out that where canals had perpendicular walls they were usually of masonry, and, consequently, relatively smooth as compared with sloping earthen banks on which vegetation of various kinds grew. Further experiments were suggested, and it was pointed out that model experiments would be very valuable as forming an accurate comparison between the two cross-sections under discussion if the surfaces in both cases could be made absolutely uniform.

Seventh paper.—"Navigation of streams and rivers," by Capt. C. V. Suppan, of Vienna. This paper was summarized by the author and briefly commented on by Mr. Thiele and several members.

Eighth paper.—"Notes on towing on the Rhone," by Mr. Lombard-Gerin, engineer of the "arts et manufactures." Summarized by the author and remarked on by

Mr. Suppan and several other members, the discussion turning on the relative advantages of hauling and towing systems.

Ninth paper.—"Traction of the boats on the Channel of the Iron Gates of the Lower Danube," by Mr. Edward Egan, engineer in chief to the navigation department of the royal minister of commerce of Hungary. This paper was read in German and replied to by two members in the same language. The session then adjourned to meet the following afternoon.

WEDNESDAY, AUGUST 1.—The section met at 2 p. m., when the following papers were read:

Tenth paper.—"Progres des applications de la mecanique a l'exploitation des voies navigables; monopoles de traction," by Messrs. G. La Rivière and Bourguin, engineers in chief of the "Ponts et Chaussées" at Lille and Rheims, respectively. This paper was read in French by Mr. Bourguin and abstracts given in German. It was commented on by two members, who were replied to by Mr. La Rivière.

Eleventh paper.—"Electric haulage on canals," by Mr. C. Kottgen, chief engineer of the "Siemens of Halske A. G."

Twelfth paper.—"Notes et expériences sur la traction électrique sur les voies navigables," by Mr. Léon Gerard, electric engineer, of Brussels.

Thirteenth paper.—"Halage électrique sur les canaux," by Mr. A. Rudolph, Königlicher Maschinen Bauinspector à Stettin-Bredow.

These papers, treating of the same subject, were all read in succession, and brought out an extended discussion as to the advisability of electric over horse traction, and the discussion was carried into rather minute details as to the increased output of a canal fitted for electric towing, as compared with the expense of the same. The discussion apparently resulted in a compromise tending to show that where a canal was not overburdened with work, and where consequently speed was not an important factor, electric hauling was not of sufficient advantage to pay for the expense of installation, but in canals doing a large business it was shown that electricity possessed many advantages.

Fourteenth paper.—"On the application of machinery to the water supply of canals," by Mr. W. R. Hutton, consulting engineer, New York. Read by the author, but received without discussion.

Fifteenth paper.—"Utilization of natural navigable ways of slight depth beyond their maritime portion," by Mr. J. Van Bosse, formerly director of public works in the Dutch Indies. Briefly summarized by the author.

After the discussion of this paper a resolution was presented by a special committee which had been appointed on July 31. The resolution was as follows:

The second section proposes to the congress the following resolution: "The result of the researches made in the International Congress of Navigation of Brussels with the object of determining the resistance of boats to traction completely justifies the resolution adopted by the last-named congress, viz, that it is necessary to pursue these researches, and that parallel experiments should be carried out with full-sized boats and without models, the first alone being capable of establishing absolute and exact values, and the second permitting us to rapidly and briefly establish a comparison between different types of boats and different profiles of canals."

THURSDAY, AUGUST 2.—The section met at 2 p.m., and the president discussed the question of monopolies of traction. This procedure was decided to be contrary to the order of the day, and after some debate the section proceeded to take up the fifth question.

Sixteenth paper.—"Provident institutions for the working staff of inland and raft navigation," by Mr. Just, "Geheimer Ober-Regierungsrath," at Berlin.

Seventeenth paper.—"Founding of mariners' institutions, professional instruction, provident, and relief societies in France," by Mr. G. Captier, general secretary of the chamber of marine (inland navigation).

Eighteenth paper.—"Measures of protection and instruction for ships' crews," by Mr. A. Schromm, "K. K. Hofrath," navigation inspector to the imperial royal minister of commerce at Vienna (Austria).

These papers were discussed by a number of members, the discussion tending to show the importance of the education and supervision of the personnel employed on river and canal boats. The remarks were principally in German, but were sufficiently well translated into French. Mr. Just addressed the section in German, not confining himself to the papers, but bringing out the essential points of his argument for the improvement of the social conditions of the personnel of interior shipping. He presented a supplementary note on his paper, showing the effect of the insurance against sickness and accident of the personnel, with statistics of such insurance in 1885. His remarks were translated into French.

Mr. Schromm then commented on the beneficial results attained by economic and social provisions in behalf of the personnel of inland waters.

A member read some brief notes on the urgent need of efforts being made to improve the personnel of inland shipping. He advocated schools and commissions for the grades of the personnel. He gave data about certain schools in Germany devoted to the education of the personnel of inland shipping. These men are sometimes taken into the German navy.

Four other members advocated measures for the benefit of the personnel of inland shipping, and there was some discussion on the statement that in Germany the boatmen were under one single regulation.

A resolution was adopted to bring the subject of schools and of insurance of the personnel of river and canal shipping to the general congress for recommendation to the Governments of France, Belgium, and Germany.

A resolution concerning the procuring of further information concerning electric traction, etc.

A resolution offered in regard to mechanical traction and the question of the monopolies of traction.

THIRD SECTION.

MONDAY, JULY 30.—The section met at 2 p. m., and was presided over by Mr. Quintette de Rochemont and Vice-President Vernon-Harcourt and others. The papers read were as follows:

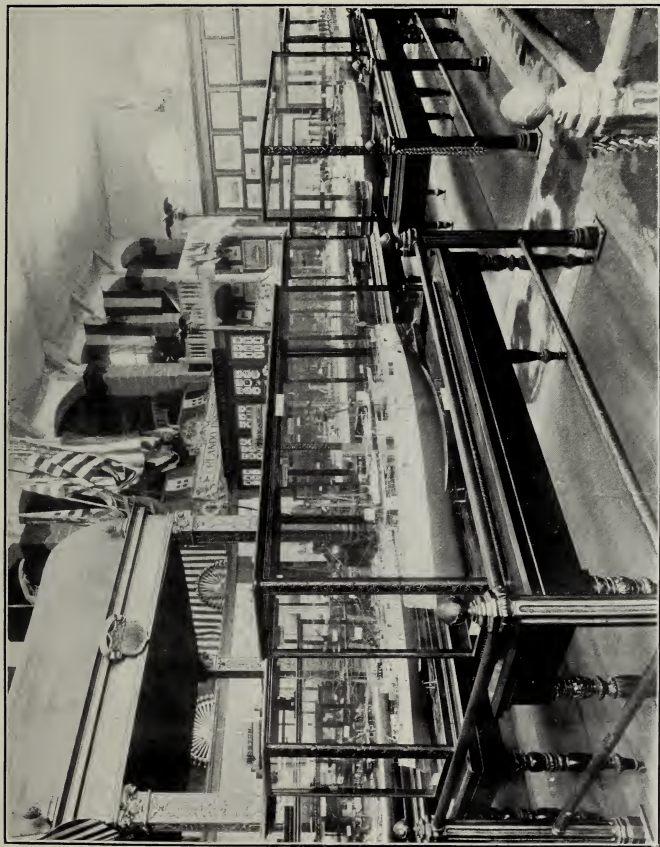
First paper.—"The most recent progress of light-houses and beacons," by Mr. C. Ribière, chief engineer in the department of light-houses and beacons. The author gave a brief description of his paper. There were no comments.

Second paper.—"The light-house establishment of the United States," by Capt. John Millis, Corps of Engineers, United States Army. Captain Millis gave a résumé of his paper, indicating the development of the lighting of the coast lines, service of maintenance, engineering features, and describing at some length the difficulties of the construction of the light-house on Diamond Shoal, and asked the congress to consider the final solution of the construction of light-houses on shifting sands.

The question of light flashes was next brought up by the president, and was discussed by Mr. Ribière, who touched on the zone of illumination, the reflectors, the length of flash, etc.

Third paper.—"Progrès du service des phares en Allemagne," by Messrs. W. Korte and Truhlsen, "Regierungs und Baurathe" at Berlin. The author gave a summary of his paper, and discussed the result in Germany, and stated that the catoptric system gave better results than the dioptric.

A letter was read by the president from Mr. Canois, contrasting the difference between English and French experiments. This brought Mr. Korte to his feet, and he asked if the duration of the flashes had been approved by the navy, stating that in Germany some mariners considered the duration too short. Mr. Ribière stated



UNITED STATES NAVAL EXHIBIT, GROUP XVIII, MODELS OF BATTLE SHIPS.

that five seconds gave satisfaction in France, and cited results of experiments proving that two and one-half seconds was too small.

The length of duration of the flash led to further discussion by German and French members. In response to a question by Mr. Korte, asking why certain changes had been made in the United States service, Captain Millis stated that experiments had been made with three coast lights and one light on the Great Lakes, widely separated geographically, and the characteristics had been changed and the duration of the flash lengthened on account of the complaints of mariners that they were not able to take bearings. Mr. Ribière then gave results of experiments with acetylene gas, the strength of light being increased from 2.25 to 4.50 over the ordinary petroleum burner.

Mr. Korte spoke in German on the influence of extreme cold weather on lights. The representative from Sweden gave the experiences of his engineers.

Fog and other signals were then discussed by Mr. Korte and Mr. Ribière.

Personnel and maintenance was next discussed by Mr. Mendès Guerreiro, of Portugal.

Mr. Ribière next gave a general talk on special methods used in construction of light-houses on shoals at some distance from the coast.

Mr. Vernon-Harcourt gave notice of an international congress of engineers to meet in Glasgow in 1901, and the session then adjourned.

TUESDAY, JULY 31.—The session was taken up by a discussion of the entrances to ports.

WEDNESDAY, AUGUST 1.—The section met at 2 p. m., and proceeded with the following papers:

Fourth paper.—"Construction of the pier of the port of call of Zeebrugge," by J. Nyssens-Hart, honorary chief engineer of "Ponts et Chaussées," delegated director of the "Compagnie des Installations Maritimes," of Bruges, and Ch. Piens, engineer of "Ponts et Chaussées." This paper was briefly presented by the author. Mr. Coisseau described the use of large blocks of cement and the manner of holding them in their places and sinking them. Mr. Vernon-Harcourt claimed that it was impossible to do this with success. Mr. Coisseau asked an explanation of the accidents to the north dyke at Altens. Mr. Kean explained that the accident occurred on account of the bottom being so soft. Mr. Coisseau then stated that if the dyke had been constructed of heavy material, and not of small elements, the accident would not have occurred. These remarks were followed by several discussions by a number of members.

The next was the discussion of the breakwater at Aberdeen, and the accidents to which it has been subject.

Fifth paper.—"The most recent works at some of the principal British seaports and harbors," by Mr. Leveson Vernon-Harcourt, M. A., M. Inst. C. E. Mr. Vernon-Harcourt presented his paper, and it was followed by a very general discussion.

Mr. Bernard gave a history of his personal experience at Ostend.

Next followed a description of one of the Holland ports, Nouveau Deep.

Following this, the action of barnacles and worms on piles was discussed. The interior works of the Suez Canal were cited as a case where no barnacles were to be found.

The section here adjourned to meet the following afternoon.

THURSDAY, AUGUST 2.—The section met at 2 p. m. A general discussion took place on sluices, and the difference between natural erosion on scouring and artificial means by reservoirs and gates. It was generally maintained that the artificial means were not effective, the contrary opinion being held by Mr. Vander Schueren.

Mr. Lindon W. Bates then read extracts from his paper on "International navigation and its interests." This brought out a reply from Mr. Vernon-Harcourt, who stated that he believed Mr. Bates to be a constructor of dredges, and that he believed

the dredges to be very good ones, but that he did not think this was a reason for his being considered a hydraulic engineer. He stated that he had gone by invitation of the Indian government to Calcutta, and had been nearly a year in the examination of the Hooghli River; that Mr. Bates had come there one day, procured plans of the river the next day, and submitted his scheme the third day. The president of the section here called Mr. Vernon-Harcourt to order, and explained that personalities of this nature could not be permitted. This observation was received with marked applause. After this, Mr. Vernon-Harcourt proceeded to demonstrate on the black-board the advisability of his means of clearing the river and the impracticability of Mr. Bates's. His explanation was received with considerable impatience, as it was known to the members of the congress that his scheme for the improvement of the above-mentioned river had not been adopted and that Mr. Bates had been invited by the Indian government to go there for the development of his plans. Several other members stated that they did not believe suction dredges could be used in anything but shifting sands or soft mud. Mr. Bates replied by simply citing the official trials of the dredgers and the statistics that are in his paper. The discussion was more a commercial than a technical one, as the members who spoke against the Bates dredger system were all competitors in the same line.

The papers which formed the subjects of discussion in this section were as follows:

"Travaux les plus recents executes dans les principaux ports littoraux ou maritimes du Portugal," by Mr. J. V. Mendès Guerreiro, engineer in chief of public works at Lisbon.

"Lenses for ships' lights," by Mr. William Dyce Cay, M. Inst. C. E., F. R. S. E.

"Notice on the most important works executed in some Italian ports," by Mr. Giaccone, inspector of the Genio civile at Genoa.

"Note sur les travaux executes dans quelques ports de la Mediterranee," by Mr. Le Baron Quinette de Rochemont, inspector-général des "Ponts et Chaussées."

"Enlargements and improvements in the principal German ports during the last few years," by Mr. Hans W. Schultz, Regierungs-Baumeister at Swinemunde.

"Works recently carried out and in contemplation at the port of Liverpool," by Mr. Anthony G. Lyster, engineer in chief to the Mersey Dock Estate.

"The most recent works at the principal French works on the North Sea, the channel, and the ocean," by Mr. Barbé, chief engineer of "Ponts et Chaussées," at Dunkirk.

"Travaux recents effectues dans les ports de Barcelone et de Bilbao," by Mr. Pedro Garcia Faria, ingénieur des chemins, canaux et ports, à Baelone.

"Travaux executes recemment et en cours d'exécution a l'atterage et au port d'Ostende," by Mr. Van der Scheuren, ingénieur des "Ponts et Chaussées" à Ostende.

FOURTH SECTION.

MONDAY, JULY 30.—The section met at 2 p. m., and was called to order by the president, Mr. Hugot, who announced the names of the vice-presidents and secretaries. The papers presented were as follows:

First paper.—"On the adaptation of harbors to the requirements of modern mercantile shipping," by Mr. L. Franzius, Oberbaudirektor, Bremen. This paper was not read, but briefly summarized by the author. One of the vice-presidents asked for certain supplementary information, but there was no regular discussion.

Second paper.—"The harbors of the world; their present and required conditions of navigability and facilities," by Mr. Elmer L. Corthell, civil engineer, New York. Was read by Mr. Lambin, one of the secretaries, and was briefly commented on by one member.

Third paper.—"Transformation du material et des procedes de la marine marchande," by Mr. Vétillart, ingénieur en chef des "Ponts et Chaussées" at Havre. Was read and explained by the author, but not discussed. The president urged the

members to hand in their discussions on the first two papers, or else prepare to make them verbally at the next meeting.

The section adjourned at 4 p. m.

TUESDAY, JULY 31.—The section was called to order at 2.25 p. m. by the president.

One of the secretaries gave a résumé of the proceedings of the previous session, and the president called upon the members for any written or oral discussions they cared to make on the papers previously read. No response was made by any member.

The following papers were then read:

Fourth paper.—"Improvements in mechanical appliances for the working plant of ports," by Mr. Delachanal, engineer of the Havre chamber of commerce. This paper was read by the author, who also gave some supplementary explanations concerning it. It was discussed by three Frenchmen and one German, with frequent interruptions from the Chair in the form of inquiries for information or exceptions to statements made or data submitted. Finally, after Mr. Delachanal had answered all the remarks, he thanked those who had taken part in the discussions.

The discussion of this paper was principally important as bringing out the very backward state of the subject of electric cranes, etc., abroad, and it seemed to be the opinion of most of the members concerned in this discussion that electric cranes had not yet demonstrated their practical utility.

The session was then adjourned.

WEDNESDAY, AUGUST 1.—The session was called to order at 2.20 p. m. by the president, and the minutes of the previous meeting were read by the secretary. The president then announced that Commander Beehler, U. S. N., would read a few observations on the subject of electric cranes and other electric appliances for use on wharves, in basins, etc.

The notes were read by Commander Beehler in English and then translated into French. A German member here made some observations, whereupon the president read from Commander Beehler's notes in answer to inquiries by a German and a Frenchman. The discussion was followed by a few remarks in explanation by the author.

Here one of the secretaries made some observations on the paper by Mr. Corthell, followed by remarks by Mr. Delachanal, all to the effect that Mr. Corthell's prophecies were too visionary. A German member followed to the same effect. Two French members discussed the question of sheds and wharves for handling the cargoes of enormous steamers proposed by Mr. Corthell.

Here a verbal presentation by Mr. Lambin on the question of shipwreck in harbors, due to the weather or accident, and how same should be treated, practically, ethically, judicially, and administratively. He read a proposition to refer the matter to the permanent bureau of the congress for report to the ninth international congress, and the same was adopted after some remarks by the president.

Here followed unfavorable remarks by two French members on Mr. Corthell's paper.

At 3.50 the fourth section adjourned, to meet again on Friday morning at the session of the full congress, all work of the section having been completed.

There is transmitted herewith the report presented by the board of the provisional committee elaborating a scheme for the permanent organization of international congresses on navigation.

FRIDAY, AUGUST 3.—The entire congress met at 9.30 a. m. in the main hall of the palace to receive the reports of the presidents of the four sections.

The president gave a résumé of the questions discussed in each section and then invited the president of each section to present his report. These reports were given at considerable length and were read in French, and then translated into English and in some cases into German.

On account of the lack of time all of this was done with great rapidity, and it was

not possible to take down the various conclusions, recommendations, and resolutions, but these will all be printed and distributed at a later date, but probably not before some months. In the meantime the general secretary of the congress has been kind enough to agree to supply a written copy of the resolutions, etc., and as soon as they are available they will be transmitted. It may be well, however, to state briefly here that the congress voted unanimously in favor of establishing a permanent international congress on navigation based on practically the same lines as the very successful international congress of railroads. To this end the congress follows generally the plan laid down in the report presented by the board of the official committee, and they urge upon all nations to take prompt action to appoint official delegates and to agree to pay a proportion of the general expenses of the committee of study and the bureau of the congress, which is really a subcommittee of the committee of study. They propose that each Government should appoint about five delegates, these delegates to elect one of their number to form part of the permanent bureau. It is thought that an appropriation of about \$6,000 per annum would be sufficient from each one of the nations interested. It will be the duty of the permanent delegates to keep themselves informed by correspondence of the progress made in the various branches of navigation, and to decide when and where it would be advisable to assemble the next congress.

The congress adjourned after the reading of the reports to meet in the afternoon.

The congress again met at 2.30, when the president made an address thanking the members for the valuable papers they had presented and the interest with which the proceedings of the congress had been followed, and expatiating on the great value to navigation of these international congresses.

The general secretary of the congress made a short speech in which he excused the absence of the minister of public works, and conveyed the latter's regrets that the death of the King of Italy had rendered it impossible for him to entertain the delegates at the reception to which they had been invited. Appropriate speeches were then made by the representatives of the delegations from foreign countries, Germany, Belgium, Spain, the United States, Holland, Portugal, and Russia, after which the Congress adjourned.

On the morning of July 31, the members of the congress were invited to visit a towing steamer on the Seine. About 140 members presented themselves at 9 a. m., and were conducted on one of the Seine boats to about 2 miles below St. Cloud. There the towing boat No. 12, *Aragot*, was inspected by the company.

This towing boat is fitted with two heavy barges by means of a chain cable laid down in the bed of the Seine. The steamer has compound engines and a screw propeller for maneuvering when the chain cable is not attached. The engines were not sufficiently powerful to tow with, but are used to run the magnetized roller under which the river chain cable is passed and made to adhere magnetically without using sprockets.

The steamer picks up the cable, under-runs it until a shackle is found, unshackles and passes the ends in over the rollers (no sprocket wheels), and round three magnetic wheels or drums. The operation of the tower was explained during a practical exhibit of the work, the boat traveling about 2 miles with a large, heavy tow. The chain comes in over the bow of the boat, passes over a small wheel, thence down around the large driving wheel, thence up over the second small wheel, and thence out over the stern. The large wheel is driven by the main

towing engine. Ordinarily these boats have sprocket or capstan wheels which engage in the length of the chain, but this invention consists in the large wheel being magnetized by means of a dynamo run by a small auxiliary engine. This causes the chain to adhere to the large wheel, and this does away with the necessity of sprockets. The wheels have merely a smooth score running round the circumference.

As before mentioned, the tower may travel by its own machinery being fitted with a screw. The screw shaft and the driving shaft (by means of which the driving wheel is actuated) are connected with the main engine shaft by electric clutches, so that the whole power of the engines may be thrown either on the propeller or on the driving gear.

The tower may be disconnected from the chain by hauling in sufficient slack to allow the chain to be thrown off the large wheel when the bight is thrown over the side. To connect the chain, however, it is much handier to unshackle on account of the difficulty of passing the bight over the lower wheel.

In five minutes a boat can pass the chain to one going in the opposite direction, after which both proceed. There is but one chain in the river. At this experiment the apparatus worked satisfactorily. Five heavily laden barges were towed at a speed of about 3 or 4 miles an hour.

A fully illustrated description of this invention was published in the *Engineering* about a year ago.

On Saturday, August 4, the members of the congress were invited to visit the metropolitan or underground railroad and the underground electric portion of the Orleans Railroad, which has recently been constructed.

They were also invited to a reception to be given by the minister of public works and Madame Baudin at the ministry of public works on the evening of the same day. The reception was to have been preceded by a dinner to which the president and vice-presidents of the congress were invited, but all of these invitations were canceled on account of the recent death of the King of Italy.

RICHARDSON CLOVER,

Commander, U. S. N., Senior Member.

WILLIAM H. BEEHLER,

Commander, U. S. N., Member.

GILES B. HARBER,

Commander, U. S. N., Member.

A. C. BAKER,

Lieutenant-Commander, U. S. N., Member.

H. C. POUNDSTONE,

Lieutenant, U. S. N., Member,

WM. S. SIMS,

Lieutenant, U. S. N., Secretary.

CONGRESS OF NUMISMATICS.

An international congress of numismatics was held, under the patronage of the French Government, from the 14th to the 16th of June, 1900, in the palais des congress of the Exposition. Comte de Castellane, president of the French Numismatical Society, was president of the organizing committee, and M. De Foville, director of the French mint, and M. Babelon, curator of the department of medals at the National Library, were among the vice-presidents.

The proceedings of the congress included, besides the sessions, visits to establishments connected with the scientific study of numismatics. Only members of the congress took part in the sessions or visits. Delegates of French and foreign State departments were treated as members.

A programme of five sections was followed as a basis. It is the object of the congress to encourage scientific as well as friendly relations among the numismatists of the world.

I.—NUMISMATICS—ANCIENT PERIOD.

1. Geographical order to be followed in the general description of coins of the ancient world. Imperfection of order adopted by Mionnet. Possible remedy, without upsetting entire economy of system.

2. Present state of Celtiberian numismatics.

3. Discussion of different theories concerning introduction of Philip's staters into Gaul.

4. Study of names inscribed on Gallic coins.

5. Can the present classification of Etrurian coins be accepted in its entirety?

6. Chronological and geographical classifying of coins struck by Carthaginians.

7. First portraits figuring on antique coins of Greece.

8. Lycian coins from point of view of origin and meaning of coin types.

9. How did the Sassanid coin type enter into Indian coinage and what princes adopted it?

10. Probable epoch of coins in bronze, bilingual (Chinese and Kharoshthi characters), recently discovered in Kachgarie.

11. Influence of Greek coin type on those of the Roman Republic.

12. Explanations proposed in regard to coins of restitution.

13. Difficulties of the numismatic history of the reign of Gallienus.

14. Coin molds in terra cotta; complete list of finds of this kind, and of molded coins of antiquity.

15. Coins of barbarians, (1) imitated from Greek and Roman types, (2) original types. Their importance for the history of civilization from the technical and æsthetic point of view.

II.—NUMISMATIC—MIDDLE AGES AND MODERN PERIOD.

16. Present possibility of new explanation concerning the organization of Merovingian coinage workshops.

17. Can the examination of the metallic standard of Carolingian coins furnish useful information as to classifying the kinds issued from the same workshops?

18. How was the *jus monetæ* exercised by the first Capetians?

19. Indication of coins mentioned in documents of the Middle Ages and not hitherto found.
20. Indication of coin documents preserved in public or private establishments.
21. Economic reasons which caused Arab gold to enter Europe at the time of the Crusades.
22. Borrowing of coin types by France from neighboring countries and vice versa at different epochs. Interest of the question from the point of view of political and economical relations.
23. Relation of the Cologne mark with the divers marks of France and England.

III.—CONTEMPORARY NUMISMATICS AND COIN QUESTIONS.

24. Critical and comparative examination of type figuring on coins manufactured at present by the different States. Deduction of general rules for the composition of historical and allegorical subjects, which are at once æsthetic and intelligible.
25. Utility of different apposes on coins—are they worth preserving in our day?
26. Researches as to coin countermarks from the beginning of our own times. Collection of documents mentioning these signs.
27. Do documents exist in Germany concerning the invention by the Audburg mechanic called "Knight of the Holy Sepulcher," of mechanical processes of making coins, introduced into France under Henry II, and employed in Paris at the Monnaie des Etuves et du Moulin?
28. The most efficacious means of combating the counterfeiting of antique coins. Indication of repressive measures which the different Governments might take against the counterfeiters.

IV.—MEDALS AND COUNTERS.

29. Imitation by foreign engravers, particularly in Belgium, of the allegorical subjects represented on French medals of the eighteenth century.
30. Investigation of French counters of sixteenth and seventeenth centuries, struck at other mints than that of Paris.
31. Classifying of counters of House of Anjou. Investigation of those struck in Anjou and Provence, and those of Italian fabrication.

V.—VARIOUS QUESTIONS.

32. Numismatic bibliography. For each country, list of printed catalogues of public collection of coins and medals. Indications of public collections of which no catalogue exists.
33. What are the general works the publication of which would render easier the study of numismatics? Is it possible to establish permanent relations among the numismatical societies of the different countries?

THE ORNITHOLOGICAL CONGRESS.

The third international ornithological congress was held, under the patronage of the French Government, from the 26th to the 30th of June, 1900, in the series of official congresses at the Paris Universal Exposition. This session was organized under the direction of the permanent international committee named at the second congress, held at Budapest in 1891. Important questions relating to the classification, habits, migrations, uses, breeding, and acclimatation of birds formed

the matter of discussion and reports of the congress. The organizing committee made every effort to insure the success of the congress by bringing together the chief naturalists of the world.

In the Comité de Patronage, comprising foreign specialists adjoined to the French organizing committee, there were the following American members: Messrs. W. Brewster, Cambridge, Mass.; Elliot Coues, Smithsonian Institution, Washington, D. C.; D. G. Elliot, Field Columbian Museum, Chicago; Clinton Hart Merriam, Department of Agriculture, Washington, D. C.; Harry C. Obertolser, Biological Survey, Department of Agriculture, Washington, D. C.; Robert Ridgway, Smithsonian Institute, Washington, D. C.; R. W. Shelfeldt, Washington, D. C., and Leonhard Stejneger, Smithsonian Institution, Washington, D. C.

The work of the congress was divided among five sections, as follows:

First section.—Systematic ornithology—Classification, description of new genera and species; nomenclature.

Anatomy and embryogeny of birds.

Paleontology—Classification, description of new genera and species; ancient faunas, relations of extinct to present species.

Second section.—Geographical distribution of birds—Present faunas—Species extinct in historic times.

Migrations.

Accidental changes of place—Appearance of rare species in certain districts.

Third section.—Biology—Habits—Diet—Nesting.

Oology.

Fourth section.—Economic ornithology—Protection of species useful to agriculture; destruction of harmful species—Hunting.

Acclimatation.

Aviculture.

Fifth section.—Organization and working of the international ornithological committee.

Election of new members.

(This section was especially reserved for members of the permanent international committee.)

THE PEACE CONGRESS.

The universal peace congress was in session at Paris from September 30 to October 5. The deliberations of the congress were conducted along the following lines:

1. Reports of the events of the year which touched upon peace and war.
2. The international conference at the Hague; study of the decisions made there and their consequences.
3. International law.
4. Councils of peace; report of the commission on the protection of natives.
5. On the ratification of arbitration treaties.
6. Probable political and industrial consequences of war in the future.

The congress heard the general report of M. Elie Ducommun, a report prepared by the permanent committee of the international

bureau on the events of the year 1899-1900, relative to peace and war. There was voted an appeal on the opinion which had recently been published through the political press on the subject of the Transvaal. The congress expressed itself likewise on affairs in China and the Armenian question (reported on by M. H. Arakelian), the protection of the natives, conditions of future warfare, sanction of arbitration (reported on by M. d Montluc), councils of arbitration, and international investigations. These questions were examined in sections, of which the rapporteurs were MM. Novikow, Amile Arnaud, and Gastonmoch.

The congress decided to accept the invitation which was made by the international association for the development of science, art, and education, to hold the next congress in Glasgow in 1901; the exact date will be fixed by the permanent international bureau at Berne.

CONGRESS OF PHILOSOPHY.

The philosophical congress met at the Lycée Louis-le-Grand, rue Saint-Jacques, August 1 to 5, inclusive. The chief work of the congress was to make a sort of inventory of the philosophic researches which are now pursued everywhere, taking into account the gaps found in this or that country and discussing the means of filling them, and a concerted attempt was made to increase the convergence of the principal tendencies in philosophic thought.

In France, particularly, philosophy long remained isolated from the sciences, at least in the university, but at present the younger philosophers apply themselves with ardor to special sciences. On the other hand, men of science begin interesting themselves in the philosophic problems raised by their studies. The time has come for us to make acquaintance with the ideas which have been developed abroad in favor of a closer union and more constant union of science and philosophy. It is of great interest and profit to be instructed in the progress to be made in certain branches of knowledge scarcely known among us. In France, again we have been led by our historic development to found a system of education, moral, rational, and secular (*laïque*), independent of religious belief. The congress furnished the opportunity to professional philosophers, students of pure theory, to meet with moralists, the philosophers of preaching and action. We should receive with gratitude communications from the organizations and representatives of the "ethical societies" which are said to flourish in America, and also in England, Germany, Switzerland, Sweden, etc.

The congress was divided into four sections. These sections were: General philosophy and metaphysics, moral philosophy, logic and the history of sciences, and the history of philosophy. The sections in their deliberations followed these general lines:

I.—GENERAL PHILOSOPHY AND METAPHYSICS.

1. Science and metaphysics—Can the science be reduced to unity?
2. The nature of the fundamental psychical fact.
3. Unity and identity of the ego.
4. Relation of spatial intuition to intellectual representations.
5. Liberty and determinism.
6. Monism and dualism.
7. Relativity of knowledge.
8. The unknowable.
9. The problem of finality.
10. Different forms of contemporary idealism.
11. Rationalism and fideism; the part of the will in judgment.
12. A system of categories.
13. Possibility of a common terminology for all philosophers.

II.—MORAL PHILOSOPHY.

1. Can a system of morals be constructed apart from all metaphysical doctrine.
2. Is moral education sufficient for the mass of the people without the help of religious belief?
3. Relation of Christian morality with the contemporary conscience.
4. Is a moral sanction possible? Is it necessary?
5. The purposes of civilization.
6. War and peace—Is it possible to suppress war?
7. The happiness of the individual and the interest of society.
8. Morals and politics.
9. Is the foundation of justice individual or social?
10. Solidarity.
11. Cosmopolitanism.
12. Casuistry in morals.
13. In what measure is the social question a moral question?
14. Philosophic sociology and scientific sociology.
15. Conditions of responsibility in the social and in the moral order.

III.—LOGIC AND HISTORY OF SCIENCES.

I.

1. Algebra of logic and the mathematical theory of probabilities. Theory of wholes, chains, groups. The transfinite.
2. Principles of analysis—number, continuity, theory of functions.
3. Postulates of geometry, their origin and value. Intuition in mathematics. Non-Euclidian geometries.
4. Methods of geometry; analytical geometry; projective geometry; geometrical calculus (quaternions).
5. Principles of mechanics, their nature and value.
6. Methods of mathematics; physics; theory of errors and approximations.
7. General hypotheses of physics; mechanical theory and theory of energy.
8. Hypotheses of chemistry; constitution of matter; the atomic theory; stereochemistry.
9. The problem of the origin of life.
10. Theories of the evolution of species; transformation; heredity.

II.

1. The origin of infinitesimal calculus.
2. The genesis of the notion of imaginary quantities and the progressive elucidation of the theory of functions.
3. History of the discovery of Newtonian gravitation and its influence on the development of mechanics and physics.
4. Exposition of the needs which led, little by little, to the foundation of thermodynamics and, at the same time, of a whole part of science on autonomous principles; principle of the conservation of energy; principle of Carnot-Clausius.
5. History of successive ideas of method in biology.

IV.—HISTORY OF PHILOSOPHY.

1. Object and method in the history of philosophy.
2. Progress in the history of philosophy.
3. Can the study of ancient philosophy have any theoretic utility for us?
4. The place and sophistics in Greek philosophy.
5. Can the historic evolution of the ideas of Plato be ascertained?
6. Principles of the science of nature according to Aristotle.
7. Plotinus's idea of evil.
8. Value of the scholastic philosophy.
9. Place of Descartes in the general history of thought.
10. Spinoza and Leibnitz.
11. Philosophy of Hume in the development of modern thought.
12. Kantian criticism and psychology.
13. The moral system of Fichte.
14. Hegelianism in present philosophy.
15. Principal tendencies of contemporary philosophy.

THE PHILOSOPHICAL DEVELOPMENT OF FRANCE.

[By Paul Carus.]

The philosophical development of France has of late come more and more under the influence of Comte, and almost all scientific workers are at present in the habit of calling themselves positivists. Philosophy in the schools, lyceums, and colleges, however, has remained a kind of eclecticism which is partly under ecclesiastical influence and partly in the style of Maine de Biran and Victor Cousin.

Since the thought of a country is strongly influenced by the publications which appear, the character of the publishing houses has a good deal of influence upon the direction of the thought of a nation; and it happens that in France philosophical aspirations are centralized in the publishing business of an able Jewish house by the name of Alcan. The main influential exponent is a magazine, the *Revue Philosophique*, which Alcan publishes under the editorship of Monsieur Th. Ribot, who has been made professor of psychology in the Collège de France, at Paris. The thinkers who cluster around the *Revue Philosophique* are dominated by the agnostic spirit of Auguste Comte,¹ finding their principal opponents among the representatives of the Church of Rome. But since the tendency of the French positivism, which is practi-

¹Auguste Comte called his philosophy positivism, although it is practically a negativism. He limited philosophy to the positive sciences, and abstained from descanting upon metaphysical problems. His attitude was neither to affirm nor to deny.

French positivism (viz, the philosophy of Auguste Comte) differs from the more modern positivism as upheld in America, where it has found an exposition in *The Monist*, of Chicago. Comte limits philosophy to the several positive sciences, and proposes neither to affirm nor to deny the questions of metaphysics (which is philosophy proper); while American positivism attempts to solve these questions upon the basis of the positive facts, sifted and made ready for use by the sciences.

cally an agnosticism, is to leave religious and metaphysical questions alone, there is scarcely any open warfare between the two parties, and many Catholic clergymen show an interest in the methods of modern psychology—a fact which became obvious to those who attended the psychological congress at Paris, for there were quite a number of Catholic clergymen in attendance; and there is a Catholic periodical specially devoted to the results of modern psychology.

Since the positivists repudiate metaphysics and all such philosophical investigations which touch upon questions that directly or indirectly relate to the problems specifically called philosophical, the psychological congress, which was presided over by Monsieur Ribot, had become their main center of representation at the congresses of the Paris Exposition.

In the meantime, a younger generation, including such representatives as MM. Xavier Léon and L. Lévy-Bruhl, has grown up, who are not satisfied with the negative results of Comtian positivism. They urge the solution of those problems which are rejected by Comte as metaphysical; they want to investigate the nature of life, the significance of the world, the interrelation of the moral problem with science, the origin and purpose of religion, etc. They feel that Comtian positivism has not spoken the last word on the subject, and that the work must be resumed and the problems reformulated. These men insist that the metaphysical questions are neither redundant nor irrelevant, and thus they band themselves together for the purpose of creating in France a new atmosphere in which there would be a freer scope for the discussion of hitherto neglected philosophical subjects.

The editor of the *Revue de Métaphysique et de Morale* is Monsieur Xavier Léon, and he is assisted by a number of younger sympathizers; but the line of demarcation between the adherents of this new school and the older one of Comtian positivism is not so strong as not to allow them to count some friends among those authors who contribute to the *Revue Philosophique* or who are otherwise connected with Monsieur Alcan's publishing house.

The new metaphysical school, if we may be permitted to use this term, is not yet well defined in its purpose and plans. It is still in a condition of becoming, and has not as yet outgrown the state of being mainly a party of protest against the restrictions of the dominant philosophy. Their ascendancy, however, was felt at the congresses by their gaining a special representation in the congress of philosophy. The philosophical congress was denounced by those favoring the Comtian conception as "metaphysical;" that is to say, as an unscientific philosophy which unwisely deviated from the course which had been prudently prescribed for it by the great founder of the positive school of philosophical thought.

Through the combination of some unfortunate accidents and misinformation as to the date of the congress, the writer was prevented from attending, but he succeeded in gaining an insight into this condition of affairs by conferring on the subject with some of its representative exponents. It appears to him that, while the thinkers of this philosophical tendency have not as yet matured into definiteness, so as to allow of characterization, the movement must be regarded as a hopeful sign of a reawakening interest in a genuine and serviceable philosophy.

The promoters of the new school have not as yet succeeded in having their programme worked out and stated before the world by some authoritative leader who might be regarded as their master; and the prospect of their coming to the front so as to dominate and influence the life of the French nation is as yet very slight. Nevertheless, their mere existence and their organization in the *Revue de Métaphysique et de Morale* seems to be a symptom of promise that should not be underrated.

The philosophical congress, though little attended by the dominant philosophers of France, viz, the adherents of Comtian positivism, must be regarded as quite a success, and an event the importance of which will depend upon the further development of the intellectual life of the French Republic.

PHOTOGRAPHY.

The congress of photography continued the work of the two previous international congresses on this subject held at Paris in 1889 and at Brussels in 1891. It examined the practical side of the resolutions adopted on those occasions, with a view to perfecting them in the light of the experience acquired in the interval. Certain questions that arose since the last session were discussed.

There were public sessions, as well as the general and section meetings, some of which were devoted to practical work. There were also lectures and organized visits to scientific and industrial establishments.

Specialists were invited to present the results of their observations on questions of general as well as technical interest, and editors of photographic publications were received as the guests of the congress.

CONGRESS OF THE PRISONERS' AID SOCIETIES.

The Union of the Prisoners' Aid Society of France was charged with the organization of the international congress of 1900. It was held in the Palais des Congrès of the Exposition, from the 9th to the 13th of July. This time was chosen so as not to conflict with the international prison congress of Brussels.

The work of the congress was divided among three sections, before which the following questions were discussed:

1. *Children*.—In the matter of paternal correction, ought not the right of parents to be recognized to choose the institution in which their child is to be confined?

What is to be thought of establishing disciplinary arrests for the light faults committed by vagabond children out of school?

2. *Women*.—What offices should be reserved for women in penitentiary institutions, both from the point of view of administration and of friendly aid?

How far should women or young girls, newly liberated, have recourse to temporary refuges. Would it not be better where possible to make sure of places for them before the expiration of their term, so that they may begin work at once?

3. *Adults*.—What means should the aid societies employ, before the expiration of the term, in order to place the liberated prisoner and provide for his recovering a position in society?

On what principles should school and professional instruction be organized in prisons and houses for correction?

The committee of organization also decided on the drawing up of four tables:

1. Societies for adults—their number, working, results.
2. Societies for children—number, statistics (as a study of the movement during the last twenty years in the number of inmates in the various institutions of correction, reform, and rescue schools), working, results.
3. The central office in France, working and results.
4. Central offices of other countries.

REPORT ON THE CONGRESS OF PSYCHOLOGY.

By HUGO MUNSTERBERG,

Professor of Psychology at Harvard University.

The psychological congress which was held in the Palais des Congrès at Paris, from the 20th to the 25th of August, was the fourth international gathering of psychologists. The first somewhat modest one was connected with the Paris exhibition of 1889, the second was held in London, the third in Munich. The congress of this year was less attended than that in Munich, and above all the attendance was less international, as Germany was very incompletely represented and England almost not at all. Americans present were Professor Ladd, from Yale; Professor Bryan, from Indiana; Dr. Scripture, from Yale; Dr. Lemon, from Washington; Dr. Warren, from Princeton; Dr. Cushman, from Tufts; Dr. Woodworth, from Columbia; Dr. Morton Prince, from Boston; and the writer, from Harvard. Professor James, from Harvard, and Professor Baldwin, from Princeton, whose presence was expected, were prevented from attending the congress.

The whole congress had a decidedly French character. It was clear from the beginning that a large majority of those present were unable to understand in the discussion any other language than French, and that seriously limited the freedom of the debates. But the French physiognomy of the meeting showed itself still more strongly in the character of the papers which were presented. A comparison of the Paris work with that of the Munich congress suggests the belief that these four years have brought about a marked change in the directions of psychological science. The Munich congress showed an almost equal interest for experimental, physiological, abnormal, and philosophical problems of psychology. The Paris congress pushed the experimental and the philosophical psychology into the background, emphasized the physiological and abnormal problems, and added the social and occultistic psychology. This change showed itself in the size of the respective audiences still more than in the numbers of papers; the rooms were overfilled when social or abnormal phenomena were under discussion and somewhat deserted when the experimental investigations of normal individual minds were in order. It would be misleading, however, to take this change as an indication of a change in the international science; it indicates nothing but a predilection for the group of experimental problems on the part of the Germans and Anglo-Saxons who determined the character of the Munich meeting and a preference for abnormal and social problems on the part of the Romanic peoples.

The one feature which was common to the Munich and Paris congresses was the fact that the papers read were on the whole trivial and

commonplace. No really important investigation or crucial research made, either there or here, its first appearance before the scholarly world. The contributions at Paris reached about the level of an average number of any psychological magazine. That is no opprobrium, as the chief function of such a congress is certainly quite a different one; the personal contact of the scholars, their social and private intercourse, is the most essential part of such a gathering, and thus probably no one left the congress disappointed, as there was most excellent opportunity for personal intercourse and a series of interesting dinners and receptions gave to the occasion all the attraction which the content of the scientific papers perhaps failed to give. It was thus also fully in the spirit of the whole that the somewhat popular accounts of the mysterious deeds of a new English medium, Mrs. Thompson, and the entertaining demonstration of a 4-year-old musical prodigy were the chief features of the whole congress.

While this state of affairs is a quite natural and for a World's Fair visitor a quite desirable one, it disburdens the reporter of the duty of giving an account of the papers. The abstracts which the authors themselves prepared will be collected in a volume to appear later. Many of the abstracts sent in beforehand and distributed in print during the congress referred to papers whose authors were not present. The accounts of the congress which have appeared in the meantime in several journals have been based on these distributed pages and thus contain for a large part accounts of addresses which were not delivered at all.

The distribution of the work was so arranged that the afternoons were given over to general seances, while every forenoon several sections met at once. The six general meetings were devoted to the history of psychology, to brain physiology, to hypnotism, to philosophical psychology, to experimental psychology, and to social psychology. Presidents of these general meetings were the president of the congress, Ribot (Paris), and the honorary presidents: Richet (Paris), Ebbinghaus (Breslau), Sergi (Rome), Myers (London), Prince Tarchanoff (St. Petersburg), and Muensterberg (Boston). The six sections were devoted to comparative psychology, presided over by Delage; to philosophical psychology, presided over by Seailles; to experimental psychology, presided over by Binet; to pathological psychology, presided over by Mafgnan; to hypnotical psychology, presided over by Bernheim, and to social psychology, presided over by Tarde. Excursions to asylums and laboratories supplemented the readings and discussions. The whole attendance was about 350 members. The fullest attendance occurred in the general seance devoted to hypnotism, in which Mr. Myers, from London, introduced the new medium. More than 200 members were present; when Mr. Myers asked the audience how many were able to understand his English about 15 hands were raised.

It was agreed to have the next psychological congress at Rome, three years hence, at Easter time. The full personal and social success of the Paris meeting is especially due to the careful preparations of M. Ribot, M. Charles Richet, and, above all, to the indefatigable secretary of the congress, M. Pierre Janet, to whom also inquiries for the printed papers should be addressed.

REPORT ON THE RAILWAY CONGRESS.

By W. F. ALLEN.

The sixth session of the international railway congress was held in the "palais des congress" of the Paris International Exhibition from September 20 to October 1, 1900.

This congress is "a permanent association established to promote the progress and development of railways." The adherents of the congress are national Governments and railway administrations. It has held previous sessions as follows:

Brussels, Belgium, in August, 1885. Attended by 257 delegates, representing 30 countries.

Milan, Italy, in September, 1887. Attended by 227 delegates, representing 30 countries.

Paris, France, in September, 1889. Attended by 564 delegates, representing 32 countries.

St. Petersburg, Russia, in August-September, 1892. Attended by 374 delegates, representing 37 countries.

London, England, in June-July, 1895. Attended by 793 delegates, representing 32 countries.

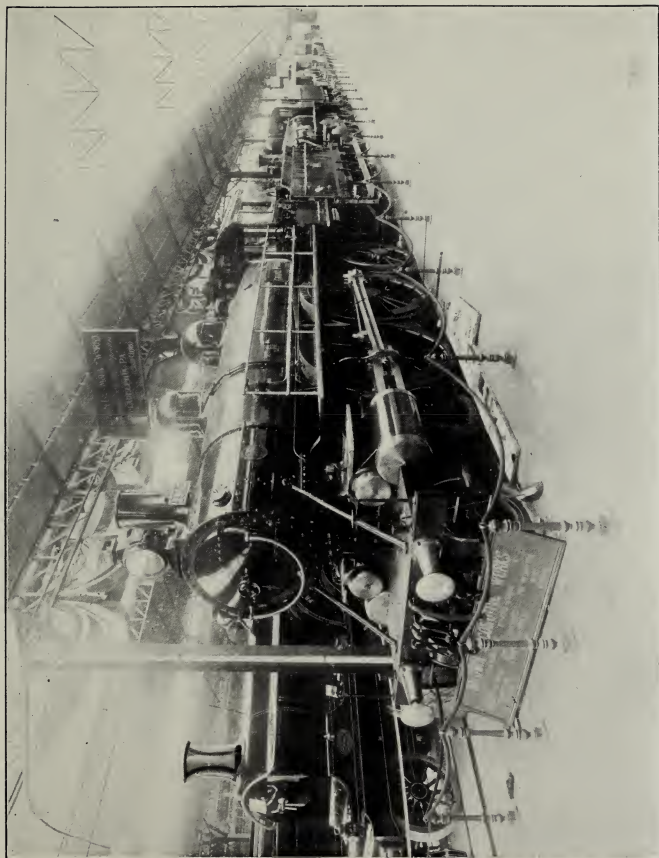
The permanent officers of the congress are Mr. A. Dubois, president; Mr. L. Weissenbruch, secretary-general; Mr. E. Holemans, secretary-treasurer.

At the opening ceremonies on September 20, 1900, Mr. Pierre Baudin, minister of public works, presided and delivered an address welcoming the delegates in the name of the Government of the Republic, and commenting upon the advantages which have been derived from the development of railway service throughout the world.

This was responded to by Mr. Dubois, the president of the permanent commission of the congress, who called attention to the growth of the congress since its first organization.

Mr. Baudin and Baron Alphonse Rothschild (the president of the Northern Railway of France), were selected as honorary presidents of the session.

Mr. Alfred Picard, the director-general of the International Exposition, was chosen as actual president for the session, and on assuming his seat delivered an appropriate address, in the course of which he called special attention to the railway features of the Exposition.



E-5. UNITED STATES LOCOMOTIVES IN RAILROAD BUILDING, BOIS DE VINCENNES.

Mr. Weissenbruch, the secretary-general of the permanent commission of the congress, was chosen as secretary for the session.

The representatives of 42 countries were present at the congress.

The following-named countries were represented by official delegates only: Bolivia, Ecuador, Haiti, Japan, Nicaragua, Paraguay, Siam.

The following were represented by delegates from railway organizations, but not by official delegates: Germany, China, Costa Rica, Peru, Persia, San Salvador, Turkey, Uruguay, Venezuela.

The following-named countries were represented by both official delegates and delegates of railway organizations: Argentine Republic, Austria-Hungary, Belgium, Brazil, Bulgaria, Chile, Colombia, Kongo Free State, Denmark, Egypt, Ecuador, France (including Algeria and colonies), Great Britain (including India, Canada, Cape Colony, New South Wales, New Zealand, Victoria, Queensland, Tasmania, South Australia, and West Australia), Greece, Italy, Luxembourg, Mexico, the Netherlands, Norway, Portugal and colonies, Roumania, Russia, Servia, Spain, Sweden, Switzerland, United States.

The total number of delegates accredited to the Paris meeting was 1,265, of whom 916 were recorded as present. The United States Government appointed 12 delegates, of whom 9 were present. The total number of delegates appointed by the American railway lines was 48, of whom 15 were present.

The organization of the congress provides that the consideration of technical questions shall be relegated to sections, which are formed immediately after the conclusion of the opening ceremonies. The proceedings are in French or the language of the country in which the congress is held.

The sixth congress was divided into five sections.

The first section considered questions relating to "ways and works."

Its session was organized by the election of Mr. Maristany, manager of the Catalan System of Railways in Spain, as president; Mr. Hohenegger, the superintendent of construction of the Northwestern Austrian Railway, as vice-president; and Mr. J. W. Post, engineer of the company operating the State railways of the Netherlands, as secretary.

The questions considered by this section, together with the names of the reporters, were as follows:

SECTION 1.—WAY AND WORKS.

I.—*Nature of the metal for rails.*

Hard or soft steel. Relation between the hardness of rails and that of tires. Means to obtain the homogeneity of the metal in heavy sections.

The most suitable length of rails for general adoption.

Observations made since the Milan session (1887) on the wear and deterioration of steel rails, especially those of heavy sections.

Wear and oxidation of the rails in long tunnels and along the border of the sea or inland saline districts.

Technical conditions of manufacture. Means of preventing the formation of blow-holes, retention of slag, and porosity of the ingots. Means of detecting the existence of internal flaws during the manufacture and inspection of the rails.

Reporters.—United States: Mr. Dudley (P. H.), C. E., Ph. D., inspecting engineer, New York Central and Hudson River Railroad, tracks and rails; and Boston and Albany Railroad, tracks and rails; New York City, Pine street, 80.

Other countries: Messrs. Bricka, inspecteur général des travaux publics des colonies, professeur à l'École des ponts et chaussées, membre du comité de l'exploitation des chemins de fer au ministère des travaux publics; Paris, ministère des colonies; and Poulet, ingénieur en chef des ponts et chaussées, directeur de la Compagnie des chemins de fer du Sud de la France; Paris, rue de la Chaussée d'Antin, 66.

II.—*Rail joints.*

Improvements effected in the design of rail joints, especially on lines over which express trains and engines with heavy axle loads are run.

Reporter.—All countries: Mr. Ast (W.), conseiller de régence, directeur de la construction du chemin de fer autrichien Nord Empereur Ferdinand; Vienne, Nordbahnstrasse, 50.

III.—*Points and crossings.*

General rules for the construction of switches, cross overs, and diamond crossings on lines where these parts of the permanent way are run over without reduction of speed, especially by trains traveling at express speed and engines with heavy axle loads.

Reporters.—Russia, Austria-Hungary, Roumania, Holland, Luxembourg, and Germany: Mr. X.

England and colonies: Mr. Worthington (W. B.), engineer, Lancashire and Yorkshire Railway; Manchester.

Other countries: Mr. Cartault, ingénieur en chef du matériel fixe et des approvisionnements de la voie à la Compagnie des chemins de fer de Paris à Lyon et à la Méditerranée; Paris, rue de Lyon, 3.

IV.—*Maintenance of way on lines with heavy traffic.*

Systems adopted for the maintenance and renewal of the permanent way on lines with heavy traffic, so as to avoid slackening speed of trains.

Reporters.—Austria-Hungary, Roumania, Holland, Luxemburg, Switzerland, and Germany: Mr. Post (J. W.), ingénieur, chef de division à la Compagnie pour l'exploitation des chemins de fer de l'État néerlandais; Utrecht.

France: Mr. Tettelin, ingénieur de la voie à la Compagnie des chemins de fer du Nord français; Paris, rue de Dunkerque, 18.

Other countries: Mr. Denys, ingénieur principal aux chemins de fer de l'État belge, chef de section des voies et travaux; Bruges.

V.—*Methods of dealing with snow.*

Means adopted for preventing the accumulation of snow on the line and for clearing it away. Consideration of the results obtained since the Milan session (1887) from the point of view of safety and economy.

Reporters.—Russia: Mr. Kareischa (Serge), conseiller de collège, professeur de l'École des voies de communication et ingénieur en chef adjoint de la construction du chemin de fer Vologda-Arkhangelsk; Saint-Petersbourg, Kousnetchny pereoulok, n° 8, log^t. 1.

Hungary: Mr. Fletzer, ingénieur principal aux chemins de fer de l'État hongrois; Budapest.

Italy: Messrs. Ovazza, chef de section principal de l'entretien des chemins de fer italiens de la Méditerranée; Turin, rue Saluzzo, 1; and Rocca, ingénieur, inspecteur principal de la direction générale des chemins de fer italiens de la Méditerranée; Milan, Palazzo ex-Litta.

Other countries: Mr. Gerstner (François), chef du service du matériel, de la traction et des ateliers à la Société autrichienne-hongroise privilégiée des chemins de fer de l'État; Vienne, Schwarzenbergplatz, 3.

VI.—*Construction and tests of metallic bridges.*

A. What quantities of metal are used and ought to be used in railway bridges according to the regulations in force in different countries?

B. What are the nature and the value of the methods adopted by the different railway administrations for the initial testing and for the subsequent periodical testing of metal bridges?

What is the real value of these tests, and can they be regarded as a practical means of establishing the actual conditions of stability and the margin of safety of such structures?

Reporter.—All countries: Edler von Leber (Max), conseiller I. R. ministériel, chef du département des installations spéciales de l'électro-technique et des études au ministère I. R. des chemins de fer d'Autriche; Vienne.

VII.—*Transition from a rising to a falling gradient.*

Investigation of the best means of connecting rising and falling gradients.

Reporters.—Mr. Hohenegger, directeur de la construction des chemins de fer Nord-Ouest autrichiens et Jonction Sud-Nord allemande; Vienne (Station N. O.).

Mr. Amadeo (Laurent), ingénieur, chef de section principal de l'entretien des chemins de fer italiens de la Méditerranée, direction de l'exploitation; Naples.

Mr. Sabouret, ingénieur principal de la voie et des travaux à la Compagnie des chemins de fer de Paris à Orléans; Paris, place Valhubert, 1.

Mr. Van Bogaert, ingénieur principal aux chemins de fer de l'État belge; Bruxelles, rue Belliard, 76.

VIII.—*Preservation of timber.*

Investigation of the various methods of preserving timber of all kinds employed for construction purposes and especially timber for railway sleepers.

Reporter.—All countries: Mr. Herzenstein (W.), ingénieur des voies de communication, vice-président de la Commission pour la conservation des bois en Russie; Saint-Petersbourg, Vozniécensky, 31, n° 143.

IX.—*Ballast.*

Properties of good ballast. Choice to be made between ballasts of different qualities, regard being paid to the character and the heaviness of the traffic, the cost, etc.

Effect of the ballast on the condition of the road.

Reporters.—United States: Mr. Feldpauche (A.), principal assistant engineer, Philadelphia, Wilmington and Baltimore Railroad; Philadelphia, Broad street station.

Other countries: Mr. Bauchal, ingénieur principal, sous-chef du service de la voie de la Compagnie des chemins de fer de l'Ouest français; Paris, rue de Londres, 49.

Paper: Mr. Wasiutynski (A.), ingénieur des voies de communication de Russie, attaché à la direction du chemin de fer de Varsovie-Vienne; Varsovie.

X.—*Creeping of rails.*

What relation exists between the disturbing action of locomotives and the creeping of rails?

Reporter.—All countries: Mr. le baron Engerth (Joseph), ingénieur, inspecteur principal de la Société autrichienne-hongroise privilégiée des chemins de fer de l'État; Vienne, Schwarzenbergplatz, 3.

The second section considered questions relating to motive power and rolling stock.

Its session was organized by the election of Mr. Frederick Almgren, manager of the state railways of Sweden, as president, and Mr. Ed. Sauvage, assistant chief engineer of motive power and rolling stock of the Western Railway of France, as secretary.

The questions in detail considered by this section, together with the names of the reporters, were as follows:

SECTION 2.—LOCOMOTIVES AND ROLLING STOCK.

XI (I of sec. 2).—*Exhaust and draft in locomotives.*

Means adopted to increase the production of steam by increased draft, to avoid fires caused by cinders from the chimney, to utilize the heat of the exhaust steam.

Reporters.—United States: Mr. Quereau (C. H.), master mechanic, Denver and Rio Grande Railroad; Denver (Colo.).

Sweden, Norway, Denmark, and Russia: Mr. Ekman (B. O.), directeur adjoint du matériel et de la traction des chemins de fer de l'État suédois; Stockholm.

Other countries: Mr. Sauvage (Édouard), ingénieur en chef adjoint du matériel et de la traction de la Compagnie des chemins de fer de l'Ouest français; Paris, rue de Rome, 44.

XII (II of sec. 2).—*Locomotives for trains run at very high speed.*

Progress realized in the construction of steep locomotives attaining very high speeds (56 miles per hour and upward), and especially in the motive power of fast trains heavily laden or running over lines with steep gradients. Use of the compound engine.

Reporters.—England and colonies: Mr. Riches (T. Hurry), locomotive, carriage, and wagon superintendent, Taff Vale Railway; Cardiff.

United States: Mr. Slack (J. R.), assistant superintendent motive power, Delaware and Hudson Company; Albany (N. Y.).

Other countries. Messrs. Du Bosquet, ingénieur en chef du matériel et de la traction de la Compagnie des chemins de fer du Nord français; Paris, rue des Poissonniers, 78; and Herdner, ingénieur en chef adjoint du matériel et de la traction de la Compagnie des chemins de fer du Midi français; Bordeaux.

Note on the use of liquid fuel in locomotives.—Mr. Holden (James), locomotive superintendent, Great Eastern Railway; Stratford.

XIII (III of sec. 2).—*Stability of locomotive axles.*

Methods of increasing the stability of locomotive axles when running. Combined effect of very flexible springs and equalizing levers on the preservation of the static loads and the stability of engines.

Reporter.—All countries: Mr. Dasselès, ingénieur principal aux chemins de fer de l'État belge; Bruxelles, rue de Louvain, 13.

XIV (IV of sec. 2).—*Banking, piloting, or double heading.*

In what circumstances can two locomotives be used advantageously to haul high-speed trains (booked speeds and speeds usually attained, maximum loads, gradients and curves)?

Reporters.—Austria-Hungary, Roumania, Holland, Luxemburg, Switzerland, and Germany: Mr. Abeles, inspecteur de la direction des chemins de fer de l'État hongrois; Budapest, VI, boulevard Andrassy, 75.

Russia: Mr. Antochine, directeur général de la Société des usines de Kolomna; Saint-Petersbourg, ligne de Wassilievsky, Ostroff, 10 l., m. 9.

Other countries: Mr. Lancrenon, ingénieur en chef adjoint du matériel et de la traction de la Compagnie des chemins de fer de l'Est français; Paris, rue Lafayette, 168.

XV (V of sec. 2).—*Purification of the feed water of locomotives and the use of disincrustants.*

A. Method employed for the preliminary purification of feed water of locomotives.

B. Employment of disincrustants. Special apparatus for preventing incrustation.

Reporter.—All countries: Mr. Aspinall (J. A. F.), general manager, Lancashire and Yorkshire Railway; Manchester.

XVI (VI of sec. 2).—*Use of steel and ingot iron in the construction of locomotives and rolling stock.*

A. Use of steel and ingot iron, rolled and forged, and steel castings in the construction of certain parts of locomotives (moving parts, boilers, fire boxes, etc.).

Specifications and tests. Means of ascertaining the presence of unseen flaws.

B. Use of steel and ingot iron in wagon construction, especially for the buffing apparatus and drawgear.

Specifications for manufacture and methods of testing.

Reporters.—United States: Mr. Forsyth (William), mechanical Engineer, Chicago, Burlington and Quincy Railroad; Aurora (Ill.).

Other countries: Mr. Durant, ingénieur du matériel, adjoint à l'ingénieur en chef du matériel et de la traction de la Compagnie des chemins de fer de Paris à Orléans; Paris, boulevard de la Gare, 41.

XVII (VII of sec. 2).—*Brakes and couplings of carriages and wagons.*

A. Recent improvements in carriage and wagon-braking apparatus.

B. Recent improvements in carriage and wagon couplings.

C. Attempts to adapt central automatic couplings to European rolling stock in conjunction with the two side buffers.

Reporters.—United States: Mr. West (Geo. W.), superintendent of motive power, New York, Ontario and Western Railway; Middletown (N. Y.).

Austria-Hungary, Roumania, Holland, Luxemburg, Switzerland, and Germany: Mr. Schutzenhofer (Victor), conseiller supérieur de construction au Ministère I. R. des chemins de fer d'Autriche; Vienne.

Other countries: Mr. Doyen, ingénieur principal aux chemins de fer de l'État belge; Bruxelles, rue de Louvain, 13.

XVIII (VIII of sec. 2).—*(Jointly with sec. 3, "Traffic".) Economical size of goods trucks or capacity of freight cars.*

Study of the most economical capacity of goods trucks or freight cars, taking into consideration first cost, operation, length of haul, character of traffic, bulk of consignments per truck or car, direction of traffic, etc.

Reporters.—United States: Mr. Loree (L. F.), general manager Pennsylvania lines west of Pittsburg; Pittsburg (Pa.).

England: Mr. Owens (C. J.), general manager London and Southwestern Railway; London, Waterloo Station.

English colonies: Mr. Oliver (Charles), chief commissioner, New South Wales Government Railways; Sydney.

Austria-Hungary, Roumania, Holland, Luxemburg, Switzerland, and Germany: Mr. de Marx, conseiller ministériel, directeur de l'exploitation des chemins de fer de l'État hongrois; Budapest.

Other countries: Messrs. Biard, ingénieur principal du matériel roulant de la Compagnie des chemins de fer de l'Est français; Paris, rue Lafayette, 168; and

Schoeller, ingénieur des arts et manufactures, chef adjoint des services commerciaux de la Compagnie des chemins de fer du Nord français; Paris, rue de Dunkerque, 18.

XIX (IX of sec. 2).—(*Jointly with sec. 5, "Light railways," in the case of littera B.*)
Electric traction.

A. Experiments with electric traction on main railways.

B. Electric traction as applied to light railways.

Reporters.—United States: Col. Heft (N. H.), chief of electrical department, New York, New Haven and Hartford Railroad; New Haven, Conn.

Other countries: Messrs. Auvert, ingénieur principal du matériel de la Compagnie des chemins de fer de Paris à Lyon et à la Méditerranée; Paris, boulevard Diderot (cour d'arrivée de la gare); and

Mazen, inspecteur principal du matériel et de la traction de la Compagnie des chemins de fer de l'Ouest français; Paris, rue de Rome, 44.

XX (X of sec. 2).—(*Jointly with sec. 3, "Traffic."*) *Automotor vehicles.*

Adoption of automotor cars (steam, petroleum, electricity) for working normal gauge lines with light traffic.

Reporters.—All countries: Messrs. Léchelle, chef du mouvement à la Compagnie des chemins de fer du Nord français; Paris, rue de Dunkerque, 18.

Sartiaux (E.), ingénieur, chef des services électriques de la Compagnie des chemins de fer du Nord français; Paris, rue de Maubeuge, 95; and

Keromnès, ingénieur principal des ateliers de machines de La Chapelle et d'Hellemmes, de la Compagnie des chemins de fer du Nord français; Paris, rue des Poissonniers, 78.

The third section considered questions relating to the operation of railroads.

Its session was organized by the election of Mr. Jules Ludvigh, ministerial counselor, member of the chamber of magnates, and president of the directors of the Hungarian State railways, as president. The principal secretary was Mr. Francis Gerstner, chief of motive power, rolling stock and shops of the Austro-Hungarian Society licensed by the State railways. He was assisted by Mr. Bleynie, assistant superintendent of the Southern France Railway Company; Mr. Cossmann, chief of "services technique" of the Northern Railway Company of France, and Mr. Frederick Kramer, engineer of the State Railway of Hungary.

The questions considered by this section, together with the names of the reporters, were as follows:

SECTION 3.—TRAFFIC.

XXI (I of sec. 3).—(*Jointly with sec. 2, "Locomotives and rolling stock."*) *Train lighting.*

Recent improvements in the lighting of trains. (Electric light, acetylene, Auer (incandescent gas) burner, etc.)

Reporters.—Austria-Hungary, Roumania, Holland, Luxemburg, and Germany: Mr. Banovits (Cajetan), conseiller ministériel, directeur du matériel et de la traction des chemins de fer de l'État hongrois; Budapest.

Other countries: Messrs. Chaperon, ingénieur, chef de la division de l'éclairage, etc., à la Compagnie des chemins de fer de Paris à Lyon et à la Méditerranée; Paris, boulevard Diderot, 20; and

Herard, sous-chef de l'exploitation de la Compagnie des chemins de fer de Paris à Orléans; Paris, place Valhubert, 1.

XXII (II of sec. 3).—*Handling and conveyance of broken loads.*

A. Arrangements for the handling of small consignments of goods at large stations. Loading, unloading, warehousing, etc.

Special appliances for the handling of large quantities of comparatively light parcels.

B. Means of facilitating the conveyance of broken loads and at the same time avoiding transfers en route and securing a satisfactory utilization of the rolling stock. Methods of packing intended to facilitate the conveyance of agricultural produce to the markets and large towns.

Reporters.—United States: Mr. Olhausen (J. H.), general superintendent Central Railroad of New Jersey; Jersey City (N. J.).

England and colonies: Mr. Jesper (Charles), general goods manager Northeastern Railway; York.

Other countries: Mr. Bleyne, ingénieur des ponts et chaussées, sous-chef de l'exploitation de la Compagnie des chemins de fer du Midi français; Paris, boulevard Haussmann, 54.

XXIII (III of sec. 3).—*Long-distance goods trains.*

Circumstances under which it is advisable to run through long-distance goods trains.

Reporter.—All countries: Mr. Cottesco, ingénieur, inspecteur général, directeur du service de l'exploitation des chemins de fer de l'État roumain; Bucharest (gare du Nord).

XXIV (IV of sec. 3).—(*Jointly with sec. 1: "Way and works"*) *Economical interlocking apparatus.*

Use of economical interlocking apparatus in stations where Saxby, Vignier, and other systems have not been adopted on account of their cost.

Reporter.—All countries: Mr. Le Grain, ingénieur des ponts et chaussées, sous-chef de l'exploitation des chemins de fer de l'Etat français; Paris, boulevard Respail, 136.

XXV (V of sec. 3).—*Automatic block system.*

Mechanical or electrical appliances by means of which the block system works automatically, the section being normally closed in case of the apparatus getting out of order.

Reporters.—United States: Mr. Carter (E. D. C.), principal assistant engineer, Chicago and Northwestern Railroad; Chicago (Ill.).

Other countries: Mr. Cossmann, ingénieur, chef des services techniques de l'exploitation à la Compagnie des chemins de fer du Nord français; Paris, rue de Dunkerque, 18.

XXVI (VI of sec. 3).—*Signals for repeating visible signals.*

What arrangements are made for the purpose of indicating to drivers the positions of signals during fogs? Audible signals used in tunnels.

Reporters.—France: Mr. Chesneau, ingénieur en chef des mines, attaché au service du contrôle du chemin de fer de l'Est française; Paris, rue des Pyramides, 18.

Other countries: Mr. Vanden Bogaerde, ingénieur principal aux chemins de fer de l'État belge; Bruxelles, rue de Louvain, 11.

XXVII (VII of sec. 3).—*Use of the telephone.*

Use of the telephone in the working of traffic. Feasibility of substituting it for the telegraph on double or on single lines. Lightning protectors for preserving the telephone service from interruption during storms.

Reporters.—Austria-Hungary, Roumania, Holland, Luxemburg, and Germany: Mr. Wurtzler (Guillaume), inspecteur aux chemins de fer de l'État hongrois; Budapest.

Italy: Mr. Cairo, ingénieur sous-chef de service à la Société italienne des chemins de fer méridionaux; Bologne.

Spain, Portugal, and other countries using the same language: Mr. Cabral (Paulo-Benjamin), inspecteur général des télégraphes du Portugal, professeur à Institut industriel de Lisbonne; Lisbonne, R. do Duque de Bragança, 20-III.

England and colonies: Mr. Ireland (T.), telegraph superintendent Great Northern Railway; Retford (Nottinghamshire).

Other countries: Mr. Javary, ingénieur des ponts et chaussées, attaché au service central de l'exploitation de la Compagnie des chemins de fer du Nord français; Paris, rue de Dunkerque, 18.

XXVIII (VIII of sec. 3).—*Safety appliances for preventing collisions arising from runaway wagons.*

A. Skids or drags for stopping wagons on gravitation sidings. Investigation of various types. Results of experiments.

B. Appliances used in stations for preventing wagons from running away. Preference to be given to certain types, regard being paid to the gradients of the line.

C. Means and appliances adopted for stopping runaway wagons. Results of experiments.

Reporter.—All countries: Mr. Spitz (Max), ingénieur principal à la Société autrichienne-hongroise privilégiée des chemins de fer de l'État; Vienne, Schwarzenbergplatz, 3.

XXIX (IX of sec. 3).—*(Jointly with sec. 2: "Locomotives and rolling stock") sorting by gravitation. (Question not to be discussed).*

Results of the system of sorting by gravitation as far as regards the working of the traffic. Its effects on the maintenance of the rolling stock.

XXX (X of sec. 3).—*Distribution of rolling stock.*

Regulations to be adopted in connection with the distribution of carriages and wagons over an important railway system.

Reporters.—Spain, Portugal, and other countries using the same language: Mr. Drouin (Léon), ingénieur, inspecteur-général des chemins de fer de Madrid à Cacérès

et Portugal et de l'Ouest d'Espagne, de Medina à Salamanca et à la frontière et de la Beira-Alta; Paris, rue Louis le Grand, 19.

France: Mr. Luuyt, sous-chef de l'exploitation de la Compagnie des chemins de fer de Paris à Lyon et à la Méditerranée; Paris, boulevard Diderot, 20.

The fourth section considered questions of a general order.

President, Mr. Louis de Perl, counselor of state, managing director of the Russian Union for international railway affairs.

Secretary, Mr. Mange, engineer of the Paris and Orleans Railways.

The questions considered by this section, together with the names of the reporters, were as follows:

SECTION 4.—GENERAL.

XXXI (I of sec. 4).—*Accounts. (Question not to be discussed.)*

A. Accounts in general. Description of the different systems in use. Comparison of these systems from the point of view of efficiency and economy.

B. Audit. The most reliable and economical system to be adopted, and that which at the same time will least interfere with the prompt carrying out of the service.

XXXII (II of sec. 4).—*Railway clearing houses.*

Organization. Discussion of advantages and disadvantages in simplifying railway working.

Reporters.—United States: Mr. Blanchard (G. R.) commissioner, Joint Traffic Association, New York City, Liberty street, 143.

Other countries: Mr. le chevalier von Löhr (Auguste), ingénieur, conseiller I. R. de régence, chef de division à la direction du chemin de fer autrichien Nord Empereur Ferdinand; Vienne III/3, Reisnerstrasse, 28.

XXXIII (III of sec. 4).—*"Grouping" (groupage) of goods.*

Should railway rates be fixed so as to encourage the "grouping" (groupage) of goods in order to utilize the rolling stock to the best possible advantage or so as to dispense with middlemen?¹

Reporters.—France: Mr. Mange, ingénieur attaché à la direction de la Compagnie des chemins de fer de Paris à Orléans; Paris, rue de Londres, 8.

Austria-Hungary: Mr. de Szajbely (Coloman), conseiller royal, inspecteur principal des chemins de fer de l'État hongrois; Budapest.

Other countries: Mr. Stockmar, membre de la direction de la Compagnie des chemins de fer du Jura-Simplon; Berne.

XXXIV (IV of sec. 4).—*Technical education of railway servants; appointment and promotion.*

A. Attempts made by railway administrations to promote the technical education of their staff. Special schools for the technical staff. Primary schools for the children of railway companies' employees and workmen.

B. Methods of testing the knowledge of railway servants. Appointment and promotion.

Reporters.—Russia: Mr. de Sytenko (Nicolas), conseiller d'État, membre du Comité d'instruction de la section scolaire du ministère des voies de communication de Russie Saint-Petersbourg, Moïka, 1.

¹Carrying agents (spéditeurs, groupeurs) who collect small consignments from separate customers and forward them in groups, taking advantage of railway companies' reduced rates for large quantities.

Switzerland: Administration du chemin de fer du Gothard; Lucerne.

United States: Mr. Leighton (George B.), president Los Angeles Terminal Railway; St. Louis, (Mo).

Holland: Mr. Van der Wyck (W. F.), chef du secrétariat de la Compagnie du chemin de fer hollandais; Amsterdam.

Austria: Mr. Röhl (Victor), conseiller ministériel au ministère I. R. des chemins de fer d'Autriche; Vienne, Westbahnhof.

Spain, Portugal, and other countries using the same language: Mr. Drouin (Léon), ingénieur, inspecteur-général des chemins de fer de Madrid à Cacérès et Portugal et de l'Ouest d'Espagne, de Medina à Salamanca et à la frontière et de la Beira-Alta; Paris, rue Louis le Grand, 19.

Hungary: Mr. Kiss (Jean), inspecteur principal, chef de la division du secrétariat général des chemins de fer de l'État hongrois; Budapest.

Sweden: Mr. Killander, directeur du matériel à l'Administration des chemins de fer de l'État suédois Göteborg.

Norway: Administration des chemins de fer de l'État norvégien; Christiania.

Denmark: Administration des chemins de fer de l'État danois; Copenhague.

Italy: Mr. Scolari (Léon), docteur en droit, chef de division à la direction générale des chemins de fer italiens de la Méditerranée; Milan, Palazzo ex-Litta.

France: Mr. Jourde, ingénieur attaché à la direction de la Compagnie des chemins de fer de l'Ouest français; Paris, rue de Rome, 20.

XXXV (V of sec. 4).—*Cooperative societies, stores, and "economats."*

The suitability of the cooperative-store system for the servants of railway companies. Comparison of these cooperative stores with "economats," i. e., stores under the management of the railway administrations themselves.

What part should railway administrations take in the establishment of such institutions, and to what extent can they intervene?

Reporter.—All countries: Mr. Lemercier (Marcel), docteur en droit, secrétaire de la Compagnie des chemins de fer de l'Est français; Paris, rue d'Alsace, 21.

XXXVI (VI of sec. 4).—*Facilities for customs inspection.*

Methods of facilitating customs inspections at the frontiers and of reducing the time lost in stoppages by the establishment of joint stations and mixed customs services.

Reporters.—Austria-Hungary, Roumania, Holland, Luxemburg, Switzerland, and Germany: Mr. Prahacs (Jules), inspecteur aux chemins de fer de l'État hongrois; Budapest.

Other countries: Mr. Margot, ingénieur adjoint à la direction de la Compagnie des chemins de fer de Paris à Lyon et à la Méditerranée; Paris, rue Saint-Lazare, 88.

The fifth section considered questions of railway economics.

President, Sir Andrew Fairbairn, director of the Great Northern Railway of England.

Secretary, Mr. Ernest Gerard, chief engineer in charge of motive power and rolling stock of the Belgian state railways and chief of the bureau of administration, assisted by Mr. R. Godfernaux, mechanical engineer of the railway from Achiet to Bapaume (France).

The questions considered by this section, together with the names of the reporters, were as follows:

SECTION 5.—LIGHT RAILWAYS.

XXXVII (I of sec. 5).—*Influence of light railways on the national wealth.*

Consideration of the influence of light railways on the development of the national wealth, and more particularly on the traffic of the main lines in their neighborhood since their commencement. Investigation of the distinctive features of this influence.

Reporters.—England and colonies, France, and Germany: Mr. Colson, conseiller d'État, ingénieur en chef des ponts et chaussées; Paris, boulevard Saint-Germain, 159.

Belgium and Holland: Mr. de Burlet, directeur général de la Société nationale belge des chemins de fer vicinaux; Bruxelles, rue de la Science, 26.

XXXVIII (II of sec. 5).—*Means of developing light railways.*

What are the best means of encouraging the building of light railways?

Reporters.—England: Mr. Tatlow (Joseph), general manager, Midland Great Western Railway of Ireland; Dublin, Broadstone Station.

Other countries: Mr. Acworth (W. M.), London agent Southern Pacific Company; London, S. W., St. James Place, 18.

XXXIX (III of sec. 5).—*Main lines crossed by light railways.*

What are the best means to reduce the objections to light railways crossing main lines on the level (permanent way, signals, etc.)?

Reporter.—All countries: Mr. Schüler (Oscar), ingénieur, directeur et chef de la division du service général et des études de la Société priv. I. R. des chemins de fer du Sud de l'Autriche; Vienne.

XL (IV of sec. 5, jointly with sec. 4).—*Conveyance of farm produce to stations on the main railways.*

How can farm produce best be brought to main-line shipping stations (light railways, tramways, motor cars, motor cycles, cartage, etc.)?

Reporters.—United States: Mr. Harahan (J. T.), second vice-president Illinois Central Railroad, Chicago, Ill.

England and colonies: Mr. Gardner (Walter), goods manager, Great Eastern Railway, London, E. C., Liverpool street station.

Other countries: Mr. Godfernaux, ingénieur des arts et manufactures, attaché à la direction du chemin de fer d'Achiet à Bapaume; Paris, rue de Dunkerque, 18.

XLI (V of sec. 5).—*Carriages and wagons for light railways.*

The most suitable pattern of rolling stock for use on light railways with deep gradients, so that these railways may be carried to the sources of the traffic.

Advantages and disadvantages of long composite carriages with internal corridor, mounted on bogies and with or without luggage compartments (available seating accommodation, dead weight, etc.).

Reporter.—All countries: Mr. de Rechter, ingénieur principal aux chemins de fer de l'État belge; Bruxelles, avenue Fonsny, 17b.

XLII (VI of sec. 5).—*Warming of carriages on light railways.*

What are the best means of warming the carriages used on light railways?

Reporter.—All countries: Mr. Rigoni (G.), ingénieur, membre du comité de l'Association des tramways italiens; Milan, Viale di Porta Romana, 22.

Until the complete proceedings of the several sections have been published no adequate review of their decisions can be made. The papers submitted, which are published in the monthly issue of the Congress Bulletin, are generally of greater value than the decisions of the congress, which are often nonconclusive. The sessions were held simultaneously, making it impossible for a delegate to attend more than about one-third of them. All the proceedings were in French, but they will be published in both French and English hereafter.

The following questions were proposed for the next session:

First section.—The comparison of compound engines with two and four cylinders.

Third section.—The organization of various departments on lines forming a single system when portions of the line, which the company does not desire to operate for itself, are operated by other parties under leases.

Report on railway accidents of recent years of which the causes are such as to suggest the introduction of improvements in the service.

Fourth section.—Information respecting international tariffs. Suburban traffic. The revival of the bureau of international railway statistics under the auspices of the permanent commission of the international railway congress at Brussels.

Among the interesting documents offered to the congress was a valuable report on the railways of Mexico by Mr. E. Velasco, first delegate of the Mexican National Government, with historical and statistical information. The closing session of the congress was held on Saturday, September 29, at 2.30 p. m. Mr. Souschinsky, of Russia, in the name of all the delegates, thanked the members of the French section for the many courtesies that had been tendered.

The acting president, Mr. Picard, called attention to the excellent work that had been done at the congress and expressed the thanks of the delegates to the permanent officials of the congress and to the chairmen and secretaries of the several sections. He hoped that the visit to Paris had been a pleasant one and assured the delegates that they would carry home with them the warm friendship of their French colleagues.

A few amendments to the rules of the congress were adopted and the following members of the permanent commission were reelected:

Messrs. Dubois, Armytage, Behrens, Borgnini, Clark, Griolet, Jeitteles, Ludvigh, Massa, Noblemaire, Baron Prisse, and Mr. Schaar.

Additional members were also elected as follows:

Mr. De Marez-Oyens, of the Netherlands; Messrs. Perouse, Metzger, Blage, A. Sartiaux, of France; Mr. Maristany, of Spain, and Mr. Almeida d'Eca, of Portugal.

Two vacant places for American members were left to be filled hereafter by the international commission itself.

Sir Andrew Fairbairn, on behalf of the American delegates, proposed that the next session of the congress should be held at Washington, D. C., in 1904. He had twice visited the United States and could assure the delegates that they would be very well received, and



GENERAL VIEW IN UNITED STATES MACHINERY ANNEX, GROUPS IV AND V, BOIS DE VINCENNES

above all, that they would see in the United States many extremely interesting things. The invitation¹ of the American delegates is a compliment to the congress, and he hoped that it would receive an enthusiastic reception.

The proposition was approved by the international commission and was voted by acclamation.

Mr. Charles P. Clark, on behalf of the American delegates, assured the members of the congress that they would be warmly welcomed in the United States.

The session was then concluded.

The delegates were accorded special facilities for visiting and inspecting the principal railway stations, workshops, etc., of the railways centering in Paris, and were personally conducted by officials of the operating companies.

The following-named places were visited:

The St. Lazare station of the Western Railway.

The car shops of the Paris, Lyons and Mediterranean Railway at Villeneuve St. George.

The Quai d'Orsay station and the railway line in the vicinity of the Austerlitz station of the Orleans Railway.

The Noisy le Sec depot of the Eastern Railway.

The Northern Railway station.

The Courcelles Line to the Champ de Mars and the Invalides.

The Railway Exhibit of the Paris Exposition at Vincennes.

The Moulineaux electric workshops.

The La Chapelle station of the Northern Railway.

¹ The text of the letter of invitation was as follows:

"By unanimous vote of the American Railway Association, representing 184,251 miles (296,515 kilometers) of railroad, I am directed to present to the permanent commission a cordial invitation to hold the next session of the international railway congress at Washington, the capital of the United States.

"The President of the United States has authorized me to state that he hopes this invitation may commend itself to the favorable consideration of the railway congress.

"The date suggested is October, 1904, that being the time when the visit could be made most pleasant, but as some other date may be more convenient for our friends to visit us, our American railways will cheerfully agree to whatever time the permanent commission may meanwhile see proper to propose.

"We have derived much pleasure and benefit from the sessions of the congress held in Brussels, Milan, Paris, St. Petersburg, and London, as well as the present session, and from our examination of the developments of the railways on this continent, under conditions differing from those which exist in America; and we hope to be able to reciprocate by an exhibition of our methods.

"It is our earnest desire to have a large number of representatives come to the next session; to make their visit as satisfactory as possible, and also to return in some degree the exceedingly pleasant hospitality which we have everywhere received.

"To this end our invitation is most cordially extended.

"L. F. LOREE, *President.*"

The Austerlitz workshop and electric plant of the Orleans Railway.
 The La Villette, Pantin, and Bobigny stations of the Eastern Railway.
 The Bourget drilling yards of the Northern Railway.

The electric plants of the Western Railway at the Champ de Mars and the Invalides.

The gas works for lighting cars of the Paris, Lyons and Mediterranean Railway at Bercy.

The Port Royal station of the Orleans Railway and the station at Place Denfert for charging accumulators for electric lighting of cars.

Many of these visits were repeated in order to give all the delegates the opportunity of seeing the places mentioned.

Trips were also made on a train drawn by a fast engine of the Paris, Lyons and Mediterranean Railway and by an electric automobile of the Mediterranean Railway of Italy on exhibition at Vincennes.

In addition to these visits to places of technical interest the delegates were very handsomely entertained by numerous receptions and fêtes as follows:

By the Government of the Republic of France: Reception at the Élysees Palace by President Loubet, who addressed the delegates. Reception at the residence of Mr. Baudin, the minister of public works. This was preceded by a dinner of 150 covers to the international commission, the leading delegates of the several countries, and invited guests. Private visits to the museum at the Château of Chantilly. Fête at Versailles, which included a visit to the palace, a reception by Mr. and Madame Baudin, the playing of the great fountains, and a representation "de gala" by the troupe of the Opéra Comique in a tent erected on the green. Lunch was served between the acts in a separate part of the tent.

By the railway systems of France: A banquet of 1,362 covers served in a tent erected in the garden of the Tuileries, at which speeches were made by Baron Alphonse de Rothschild, Mr. Pierre Baudin, and Mr. Picard. Excursion to Chantilly over the Northern Railway, with lunch served at the Chantilly Race Track station. Excursion to Versailles over the Western Railway. Gala representation at the Grand Opera House (twice repeated) with selections from the operas of Samson and Delilah and Faust and "divertissement." Buffet in the grand foyer.

To each delegate a special card was presented, which gave the bearer free transportation for a limited period over all principal railway and steamboat lines from his home office to Paris and return, which was also good for himself and the ladies of his family on all the railways of France from September 10 to October 10, and also good for admission to the international exposition.

The economic value of the meetings of the international railway congress can not be measured alone by examining the conclusions reached upon the questions considered, important as they may be. When so many men who are engaged in a common calling assemble

together there are numerous personal conferences which promote the interchange of views on technical questions and the exchange of information respecting experiences in the solution of transportation problems, from which much benefit is derived. Of great advantage also is the opportunity which is presented of inspecting the various methods of railway operation in the countries visited, and the appliances by which the work is facilitated. These results can not be tabulated nor adequately reported, but the educational effect upon the railway officials is of very great value to transportation interests and through them to all commercial interests.

CONGRESS ON SUPERVISION AND SAFETY OF STEAM APPARATUS.

The congress on the supervision and safety of steam apparatus had before it for discussion the following topics:

I. Various systems of legislation concerning the supervision of steam apparatus. Countries in which the setting up and working of such apparatus are free from government control. Countries in which government supervision exists; various modes of organization; principal points regulated. Special dispositions applicable to boilers in mines, to locomotive and stationary engines, and to boilers in boats; comparison of the systems in use.

Persons charged with such supervision and visits. State officials or others—engineers, experts, visitors, accepted or not by government; associations of proprietors of steam apparatus.

II. Part taken by proprietors' associations in different countries in matters of preventive supervision and insurance. Intervention of associations under government control. Influence exercised by them on the construction and keeping in repair of steam apparatus, and on safety and economy.

III. Guaranties to be exacted of machinists and firemen. Age, good behavior, professional qualifications, check on their training, certificates of capacity, firemen's instructions and competitions.

IV. Safety and hygiene of boiler rooms. Conditions of placing boilers from this twofold point of view. Conditions of establishing boiler rooms. Temperature, ventilation, facility, and number of exits.

V. Steam pipes and recipients. Classification of accidents. Summary of studies made on such accidents. Consequences for construction and setting up.

VI. Manufacture of boilers. Materials used. Their employment in construction and repairs.

VII. Tubular boilers. Results in point of safety.

VIII. Water purifying—previous and after injection. Methods of removing and extracting crust.

IX. Interior corrosion of boilers.

SUNDAY-REST CONGRESS.

By I. W. HATHAWAY.

The ninth international Sunday-rest congress, held under the appointment and direction of the authorities of the Paris Exposition, October 9 to 12, 1900, was largely attended, and a very deep and earnest interest in the vital question of Sunday rest was manifested.

There were some 300 delegates present, representing nearly all the countries of Europe, also Mexico and the United States of America. Among these were, perhaps, twenty Roman Catholic ecclesiastics, including bishops, abbots, and priests, with a like number of Protestant pastors of the Continent, but the larger number were laymen embracing all classes of society, senators, deputies, counts, advocates, and at least one Bonapartist prince, but many of the humbler walks of life. It was, in the best sense, a representative body. There were but two delegates present representing the United States of America, the Rev. Dr. Thurber, pastor of the American Church in Paris, and the Rev. Dr. I. W. Hathaway, general secretary of the American Sabbath Union.

Two sessions were held each day, from 9 to 12 a. m. and from 3 to 6 p. m. The deliberations were presided over by M. René Beringer, a senator of France, and a member of the institute.

Carefully prepared papers were ready and discussed on the following subjects:

First. The report of Mr. Bompard on the conditions of Sunday rest in France.

Second. The report of Mr. Deluz on Sunday rest as observed in the several nations of the world.

Third. Sunday rest and commerce.

Fourth. Sunday rest and the service of transport.

Fifth. Sunday rest and industries.

Sixth. Sunday rest and the state, including public works, mail service, etc.

Seventh. Sunday rest and agriculture.

Eighth. Sunday rest and legislation.

In connection with the French International Exposition of 1889, a similar congress was held in the city of Paris, out of which was born the popular Sunday League of France, the object of which is to secure Sunday rest so far as is possible for all classes of citizens in France.

Previous to this an international federation of Sabbath associations of the world had been organized, having its office in the city of Geneva, Switzerland. Upon these two organizations and their efficient secretaries, Mr. O. Bompard, of Paris, and Mr. E. Deluz, of Geneva, largely rested the labor of the organization and conduct of this last congress. Their able reports, given in the opening session, gave direction to the thought and discussion of the succeeding days.

The report of Mr. Bompard, as the secretary of the popular league for Sunday rest in France, and the report of Mr. Deluz, as the secretary of the international federated societies of the world, presented a very full résumé of the present conditions, and also the advance that has been made in the several countries during the years since the first international congress, which was held in Geneva, Switzerland, in 1861, and especially during the last decade. These reports gave a wide survey of the question in its many ramifications, and showed how it touched

all phases of higher civilization and is a vital question of sociology, economics, education, public health, and public and private morals.

The religious element or phase of this question did not enter into the discussions, which were at all times confined to the physiological, economic, and social; or, as they may be summarized, as the humanitarian phases of the Sunday question.

These reports show a very marked advance in nearly all the continental countries—in the closing of shops, factories, and business offices on Sunday—and still more marked is the diminution of the public business on that day, the small number of freight trains on the railroads, the closing of freight stations, and the minimum amount of work done in connection with this branch of the railroad business. Two thousand freight trains have been stopped in Belgium alone; also the curtailment of the postal service on this day. Where heretofore the regular number of letter deliveries were made, now very generally throughout Europe there is but one Sunday delivery and no parcel delivery on that day.

In several continental countries there has been new Sunday legislation since 1889 for the further restriction of factories, shops, and transportation companies, and, in fact, all lines of business on Sunday. Among the most advanced on these lines may be mentioned Germany, Sweden, and Holland. In the latter country the public houses are closed every Saturday at 6 p. m. until Monday morning after work hours. In Norway there are no open saloons on Sunday. In Russia factory work is prohibited, and even Spain has a new law to secure the liberty of Sunday rest.

In the report of Mr. Deluz advance is shown in nearly every country within the federation except in Great Britain and the United States of America. He opens his report for the United States with these words:

In this grand country, as in Great Britain, the progress made for the past ten years is rather negative than positive—that is to say, they have devoted their efforts to conserve the position already acquired, etc.

Following these reports were the papers on the several topics named, all of which aroused and quickened the interest and provoked discussion and called forth a host of resolutions.

The great burden of the remarks and speeches made in the congress was the necessity of securing by some means liberation from Sunday toil.

The principle enunciated and accepted by all was that every person should be free to rest on this day, and that this right should in some manner be secured for all.

It was reported that in some cases Sunday rest had been granted to workmen and afterwards withdrawn because it had been abused, as the men did not return to work on Monday. This fact turned the discussion to the necessity of securing not only liberty to rest, but the edu-

cation requisite for the proper use of the day. To this end there are organizations in France and Switzerland and other countries of Europe, as well as in the United States.

A most interesting and instructive feature of the congress was the report made by Monsieur Hanore, director-general of the shops of the Louvre. A few years ago this great magasin was kept open for business all day Sunday, and was thronged by the populace, especially Sunday evenings; but a very large proportion, Mr. Hanore said, were not buyers, but country people looking and professional shoppers.

The first move looking toward closing the doors on Sunday was in 1890, when they sent out many thousands of letters to the ladies of the city, inquiring if they could or would do their shopping on the week days. The management was surprised by the number of favorable replies received. The next step was to close the door and cease all selling, but they felt compelled to deliver Saturday's sales on Sunday. This, however, they soon ceased to do, and now very seldom is there a request made for Sunday delivery, so that at present their business is entirely closed on this day, and this without any financial loss, but rather a gain, both moral and material. "For," said Mr. Hanore, "better work and better business is now done than before, and not only employee but employer are the better."

Much additional testimony was added to Mr. Hanore's of like results in Havre, Nancy, etc., having followed Sunday closing, and in no case was it reported that the business was lessened, but rather increased. Many other shops of Paris have now followed the example of the Louvre and, so far as reported, with like results.

The last day of the congress was occupied with the reading of the paper and discussion on Sunday legislation. This subject elicited more intensity of interest and greater warmth of feeling and attracted more public attention than any that had preceded it.

Many eloquent appeals were made for such legislation as should strike the shackles from enforced labor on Sunday. Many arguments were offered to show the necessity and the right of liberty on this day. These were urged from every point of view save that of the divine authority and the spiritual necessity. The principle underlying all these arguments was not questioned, the expediency of such legislation was the only point of discussion. For a time it seemed that it would be impossible to reach any practical conclusion. Many resolutions were offered, but none appeared to be satisfactory until, when the hour of adjournment was drawing nigh, Mr. E. Deluz proposed the following:

That the enjoyment of one day's rest in seven is the natural right of man, and it is the duty of the Governments to secure the same for their subjects; but that it be left to the Governments and people of the several countries to obtain this in the way and manner that shall be best suited to the conditions and circumstances of each.

This was accepted and passed unanimously as the best disposition that could be made of the question. Resolutions were offered and adopted relative to every subject under discussion, amounting to twenty-four, of which this one on Sunday legislation was the last and closing action of the congress.

President Beringer, in closing, thanked the delegates for their presence, and said that the press of France had asserted that of all the congresses that had been held in connection with this Exposition, this one on Sunday rest had been the most useful and was likely to be of the greatest service. Its aim was practical and, if realized, would mean much for the people and the well-being of the nations.

From the viewpoint of the Christian sentiment of the United States of America, this congress failed, as all such must fail, to reach the best results because of the exclusion from the discussions of thought of the divine authority and the religious use of this day. If the Sunday rest day has any claim upon society and if it be a natural right of man to enjoy this day as a day of rest from ordinary toil, it is because of its divine origin and authority.

All arguments put forth in this congress for this day of rest were really based upon the divine law as written in human nature and voiced in human need and which is crying out for recognition and obedience. This law thus written has, by some peoples of Europe, been evaded and ignored, until they find themselves in a bondage that is not only galling, but destructive of the best interests of both the individual and society, and they are now struggling, like Laocoon, against its tightening grip.

Sunday rest is found to be a necessity for the physical man, the intellectual man, and the moral man; why should they, or we, stop short of the spiritual man? This can only be done by denying the spiritual nature of man and saying that he is not in the image of God. The fact is that the Sabbath is a divine institution, established by divine authority to especially meet the necessities of man as a child of God; such a congress as this is the cry of a child out of the darkness for help without a knowledge or a confession of the real cause of the need or the nature and source of its supply.

It is a serious question whether the securing of Sunday rest for man is desirable or beneficial, except he shall recognize himself as a child of God, and the spiritual need which is involved in this relation.

If the end is simply liberty of rest from toil, we, as Christian men and women, could take no part nor lend to it our presence or support; but as it is a necessary part and corollary of spiritual need and supply, we may and must take our part in this primary department of Sabbath work. But let us be careful that we stop not here, for in a secular Sabbath or a holiday Sunday "God is less honored and Satan is better served than in other days of the week," and man may be injured a thousand-fold more than any benefit received.

This congress failed to recognize God or see in man a child of God, and thus failed to touch the true source, nature, and purpose of the Sunday rest. It is not simply Sunday that we would save, but the Sabbath. "Sunday" expresses the secular side; "Sabbath" the sacred. What is known as the American Sabbath is the day set apart by divine appointment and authority as the time for man to get acquainted with God—a time of spiritual refreshment, culture, and uplift—a time for the recognition of man's higher nature and needs. Only thus shall the Sabbath purpose and ideal be realized. A Sunday rest without God is but the rest of a brute or a heathen and will bear no fruit worthy of a Christian name or a Christian nation.

CONGRESS ON THEATRICAL ART.

The congress on theatrical art was divided into four sections—on architecture, lighting, scenery and costumes, and general questions. It discussed:

Plans and interior arrangement of halls, theaters, and auditoriums, continuance or suppression of proscenium, and the position of the orchestra.

Rules regarding the safety of spectators and artists.

Construction and arrangement of a popular theater.

The general distribution of electric or gas light in a theater.

Distribution of light in a theater and the best means of illumination.

The lighting of the stage, scenic effects, and the use of stereopticons.

Utilization of electric power, and apparatus for emergency and for safety.

Legal regulations regarding the installation of electric lights in theaters, and the duties of technical inspectors.

General construction of machinery for handling scenes and stage settings; the use of hydraulic power and electricity; and the composition, construction, and manipulation of stage decorations and furniture.

The staging of plays and operas; utilization of historic armor and costumes, introduction of music, and employment of accessories.

Municipal aid for popular theaters.

Relations between artists and theatrical agencies.

Traveling companies.

The creation of funds for pensioning retired artists.

CONGRESS ON THREAD NUMBERING.

The sessions of this congress were held on the 3d and 4th of September, with M. Winder as president and M. Fleury as secretary. As this subject is one of such vital importance in Europe, the object and purpose of the congress may need some explanation, and a brief statement of the history of the case may enlighten many.

Four international congresses on this subject had already been held—one at Vienna in 1873, one at Brussels in 1874, one at Turin in 1875, and one at Paris in 1878. The purpose of each of these congresses was to consider the general adoption of the meter and gram as a basis

for universal thread numbering. The resolutions adopted received only partial recognition, and before calling together the textile manufacturers of the world again the organizing board of the congress of 1900 determined to get a definite expression from all French manufacturers as to the desirability of this change.

Manufacturers were requested, after due consideration, to inform the committee whether they urge unreservedly the "kilogrammetric" numbering, which gives the number of kilometers contained in a kilogram, for all textile materials other than silk—the numbering of silk, on the other hand, indicating the weight in grams of a myriameter of thread. Manufacturers were also requested to report any reasons against the adoption of these bases. M. Simon's report on the history of the movement was as follows:

The adoption of our metric system of weights and measures by a great number of manufacturing countries and the growth of international relations render timely the unifying of the numbering of thread, which is based on the use of the meter and the gram.

To number or fix the standard of a thread is to ascertain the relation between the length and weight of the thread. All the methods of numbering may be brought under two subdivisions, according as the length varies for an invariable weight or as the weight changes for a fixed length. By the first method the number always increases with the fineness of the thread; by the second the number increases or decreases in proportion to the standard, according as the scale is ascending or descending.

The congress at Vienna nearly compromised the reform aimed at by its promoters by not taking account of the two bases admissible in the different industries—the fixed weight and the invariable length. The silk trade was on the point of having nothing to do with the proposed unification.

The Brussels congress, presided over, like those which succeeded it, by M. Pacher von Theinburg, of Vienna, had the merit of reconciling the special condition of the silk production with the exact data of metric numbering. The spinning of silk is still effected according to a method which is the inverse of the processes used for the transformation of other textile materials. Hence it is natural to keep to a mode of numbering which is also the inverse. Moreover, on account of the fineness of the staple, it is not possible to take the kilogram as the unit of weight. It has therefore been decided that, in reckoning the standard of silk, the numbers 1, 2, 3 * * * shall indicate that the myriameter taken as unit of length weighs 1, 2, 3 * * * grams.

Other textiles, without exception, keep the numbering according to the number of kilometers contained in the kilogram. Thus No. 150, for example, represents 150 kilometers of thread for every 1,000 grams of material.

While changing nothing in these conclusions, the Turin congress brought forward a new element of success in the unification of thread numbering, by a serious study of the conditions.

It is not always sufficient to wind off carefully one or more skeins and to ascertain their weight in order to know the real standard of the thread. The hygrometric properties of textile fibers are the occasion of differences, for a greater or less amount, which sometimes interfere with exact trade when the samples have not been previously brought to absolute dryness and then reduced to a fixed degree of humidity by the addition of the legal rate of reprise. These rates, which vary according to the nature and state of the raw material, were decided on by common agreement and recommended by the congress of Turin.

The congress of Paris in 1900 went a step further and without exacting this conditioning for every operation of numbering, decided that conditioning should be made obligatory at the demand of one of the parties.

All these questions, clearly stated, were treated in successive sessions by competent manufacturers and dealers, the resolutions were voted unanimously by the members present, and yet private enterprise has declared itself powerless. The congress asked for the support of the governments in order to reach a solution in conformity with the bases it had laid down.

Now that the public authorities are called on to interfere, it is of use to investigate the difficulties in the way of the application of a system which each one separately desires to see put in practice. For this purpose I ask leave to review briefly the chief modes of reckoning the standard in France.

The mechanical spinning of cotton, which is one of the most modern specialties, and consequently one of those least hampered by antique customs, takes the standard number from the number of kilometers contained in 500 grams. The half kilogram was, at the beginning, thus substituted for the kilogram on account of a certain opposition arising from the use of the pound, but it might easily be replaced now by the kilogram, since, without changing the testing apparatus, it would be sufficient to double the number given by the test.

Alongside of this legal numbering there is another used in the trade of fine-spun threads, not on account of any advantage over the previous method, but because a certain number of weavers were familiar with English products at a time when Great Britain spun almost exclusively the high numbers, and they have retained the English habit of reckoning. Here the meter is necessarily replaced by the yard, the half kilogram by the English pound; and the French manufacturers who sell the product of their spindles in competition with their neighbors have been led by the character of their customers to make out their bills in both English and French numbers. This double reckoning is an occasion of errors and makes the use of tables of precise equivalents a necessity.

In the linen trade the influence of the English market is absolute and the metric numbering is conspicuous by its absence. Among our French spinners the winding off is done in skeins (*échevettes*) of 300 yards, 12 skeins forming a hank (*écheveau*), and 100 hanks a packet. The packet represents a length of 329,000 meters, nearly, and the weight varies in inverse ratio with the standard number—No. 1 weighing 540 kilograms, No. 2 half as much, No. 3 a third, and so on.

Hemp spinning, according to the destination of the product, uses the English numbering of linen or the kilogrammetric reckoning.

For woollen the adoption of the uniform rules proposed by the Paris congress seems relatively easy. It is true that Norman spinners still count by pounds of 3,600 meters, divisible into four quarters of 900 meters, with submultiples (*sons*) of 90 meters. Also, in the east of France and at Paris itself, there is a reckoning by skeins of 700 or 710 meters. But there are numerous establishments which unite spinning and weaving, notably at Rheims, where the kilogrammetric reckoning is used exclusively.

In all that concerns silk France and Italy have so far kept to the reckoning based on the weight in deniers of the skein measuring 400 aunes (*ells*); but “denier” and “aune” vary with different regions, and there can be no reasonable opposition to substituting for them the gramme and meter.

The spinning of silk waste follows the legal numbering of cotton.

According to this all the difficulties result either from local uses which have no appreciable effect beyond a limited circle, or differing systems of weights and measures which react from nation to nation on commercial relations. In the first case, official regulations peculiar to each country would put an end to the anomalies, and with the aid of chambers of commerce and industrial companies, would make indi-

vidual efforts efficient. Left to itself individual enterprise is unable to triumph over the spirit of routine, and at times there might be unjust suspicions if unification demanded changes in the list of prices used for designers, contractors, and workers.

In the second case the opposition of the British Government to the adoption of the metric system would make the solution of the question difficult. But according to declarations made to the congress of Paris by English members, the trade in Great Britain is well disposed to use the metric weights and measures, which have already made their way among them in certain lines.

The congress was divided into sections in order to facilitate the work to be done, but the resolutions adopted were passed in a joint session of these sections, and were as follows:

First. That confirming the proposition of the committee of organization of this congress.

(a) The royal ordinance of May 26, 1819, shall be revoked and replaced by a provision that the thread numbering in cotton and wool manufacture shall be based on the number of kilometers and kilogrammes.

(b) The law of June 13, 1866, concerning silk, raw and otherwise, shall be modified, and that the act made by the congress and based on the weight in decigrammes of the skeins of 450 meters shall be adopted as the legal standard.

Second. That a diplomatic conference be held to arrive at an international understanding.

Third. After the promulgation of these laws and decrees and following the diplomatic conference, the importation of foreign threads numbered in a manner which shall have become illegal shall be interdicted in countries which have adhered to the new system. Two years after the promulgation of these laws and decrees in different countries these countries shall agree as to the application of the new legal measures.

TOBACCO CONGRESS.

The congress against the use of tobacco listened to prepared reports on the history, statistics, and methods of preparing tobacco for use; the chemistry and physiology of tobacco; diseases caused by its use; hygienic and social questions; the results of special instruction in combatting the use of tobacco, and the moral and criminal aspects of the question.

It was decided that the questions which were placed within the province of this congress and which were not discussed should form the basis of a new programme. It was decided to create the following words as a technical vocabulary:

"Fumage," the act of smoking.

"Tabacophile," one passionately fond of tobacco.

"Tabacophobe," one who hates tobacco.

"Tabagisme," as opposed to alcoholism.

"Tabacomanie," irritableness from tobacco mania.

"Tabagie," the consideration of where it is allowable to smoke.

The congress rejected the words "nicomania" and "nicotisme" and accepted the words "nicotonomanie" and "nicotinisme."

Resolutions were made that instruction in the injurious effects of tobacco should be obligatory in all schools; that tobacco should not be sold to minors under 16 years of age; that all regulations against

smoking should be rigidly observed; that soldiers who smoke should have good tobacco; that gifts of tobacco from the societies for first aid to the wounded should be suppressed.

The congress adjourned without deciding on the date of its next meeting.

REPORT ON THE INTERNATIONAL CONGRESS OF TRAMWAYS.

By WALTER S. ALLEN, *Delegate*.

This congress, which was organized by the Permanent International Union of Tramways, was the eleventh biennial session of that body and was very largely attended, there being on the official list of adherents 440 names, representing 23 different countries.

The largest number of members came from France, 131; Germany with 97; Belgium with 89; Italy with 29; Holland, 25; Austria, 14, and Russia, 12; the other States being represented by less than 10 members each. Austria, Belgium, Canada, France, Cuba, Germany, Holland, Hungary, Italy, Roumania, Russia, Siam, Spain, Sweden, and the United States were represented by official delegates from their respective Governments, as were also the following cities: Amsterdam, Cologne, Dusseldorf, Christiania, Liege, and Milan.

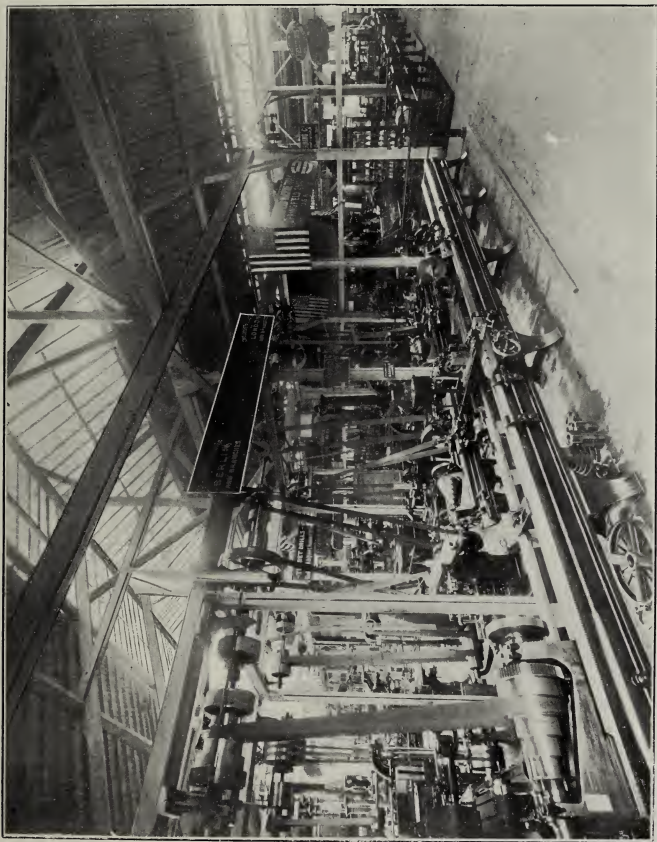
Those from the United States who were actually present at the meetings of the congress were: Mr. Willard A. Smith, of Chicago; Mr. F. S. Wilkins, of Alabama, and Mr. Walter S. Allen, of Massachusetts.

The congress organized by the choice of M. Pierre Baudoin, minister of public works, as honorary president, and Mr. Leon Jausseu, of Brussels, as president, and immediately after organization the discussion of the questions presented was taken up. A series of eleven topics had been chosen, a reporter appointed for each, and the various members of the union were asked to reply to the questions. Their replies, together with the papers prepared by the reporters, were printed and distributed among the members of the congress prior to the meeting.

The languages employed in the discussions were French and German, all that was said in either being immediately given in abstract in the other by one of the secretaries.

The first question submitted was: What changes have been made in your rates of fares in the last five years and what has been their effect on the receipts, expenses, and net profits of the road? Are the present rates considered practical? The reporter on this question, M. Gerou, director of the tramways of Cologne, after a careful analysis of the replies made to the circular sent out and using also an elaborate report made to the fifth German tramway congress by M. de Pirch, director of the tramways of Barmen Elberfeld, came to the following conclusions:

1. The rates of fare on urban tramways ought to be simple and low, but established in conformity with local conditions.



VIEW IN UNITED STATES MACHINERY ANNEX, GROUP IV, BOIS DE VINCENNES.

2. For large cities there should be an interior zone as large as possible with a single rate of fare, but this should not include the suburban lines.

3. The introduction of transfers should be advocated, but it would be well to carefully study the conditions of each case as to whether a charge should be made for transfers and the amount of this charge.

The congress received the first and second conclusions, but as to the third considerable opposition developed on the grounds that transfers made too great a demand on the companies, and that with low rates of fares for long distances within cities the introduction of transfers would cause too great a sacrifice in the receipts. On the ground that this question should be treated separately, the third conclusion was postponed to the next congress.

The third question called for the discussion of the benefits which have accrued from the introduction of the system of electric traction, and the conclusions drawn by the reporter, M. Pirch Elberfeld, were these: That electric traction by means of overhead conductors was satisfactory as a substitute for horse traction, and even for steam traction when the line exploited could employ small trains at frequent intervals over long stretches with an intense traffic, and also on lines bearing heavy grades, provided that the concession was sufficiently long and that there were no impossible conditions or exorbitant charges imposed by the contract. After adding a clause calling attention to the fact that this applied only to traction by overhead wires, the conclusions of the reporter were adopted by the congress.

The third question was: What are the relative advantages and disadvantages of narrow and standard gauge for electric traction, especially as regard mechanical arrangements?

The reporter of this question, M. Gunderloch, of Elberfeld, was absent, and his conclusions were presented by M. Oudendijk. The advantages of narrow-gauge tracks lie in the reduced first cost of installation, and that of the wide and narrow gauge in the power of transferring cars of merchandise directly to the steam railways and the better disposition possible of brakes and motors on the larger cars, besides the greater stability of the cars. The European development of secondary railways acting as feeders for the main lines of railroads has as yet made little progress in America, and our electric roads as factors in the carriage of freight are negligible. It becomes more and more evident, however, that this is to be the next step in the United States, and it will be well to recall this discussion. The general conclusion was that in the development of these secondary lines it was important that the special conditions involved—that is, whether freight was to be exchanged with steam railroads or not—should be the controlling factor, with a strong preference for the standard gauge, unless very good reasons existed to the contrary. Many objections were raised to this conclusion, and it was urged that very many of the secondary lines could not have been built at the cost of standard gauge. Special

attention was called to the system of Belgium, where one company, operating about 1,500 miles of secondary railway, practically all narrow gauge, not one-quarter of which could have been built if standard gauge had been chosen. Owing to the absence of the reporter, the matter was referred to the next congress.

The fourth question was: What should be the composition of the power station from the standpoint of the economical production of power, and especially as regards the kind of engine boilers, dynamos, etc.?

The reporters on this question were MM. de Hoop, of Brussels, and Shouet, of Liege. Their report stated that after allowing for the difficulty of expressing anything so complex as this in definite words, it might be possible to conclude that in large plants directly connected compound condensing engines should be used. In medium-sized plants it would be advisable to insert as a regulator a storage battery, and that in small plants, especially if coal was dear, gas motors using poor gas could be advantageously used.

In the discussion it was urged by one or two that storage-battery regulators might at least be carefully studied for plants of all sizes. The reporters, however, dissented from this view and called attention to the fact that on large systems the number of cars running acted in themselves as regulators; and after inserting in the conclusion after the word "compound" the words "or triple expansion," the conclusions were adopted.

The fifth question was: What is the best system for the distribution of current on long suburban lines connected with large systems of urban roads by continuous alternating or polyphase currents?

The reporter was M. van Vloten, of Brussels, and his conclusions were as follows:

1. When the lines do not extend more than 8 to 10 kilometers (5 to 6 miles) from the station, and if the service is not too heavy, preference should be given to continuous-current distribution with or without regulating storage batteries.

2. When the line extends under the same conditions from 15 to 20 kilometers (10 to 12 miles) from the station, the same plan of a central station, with continuous current and, if need be, higher voltage, and eventually step-down converters and storage batteries, continues to present advantages.

3. In certain special cases storage batteries may be preferred when the length of the line does not exceed 15 to 20 kilometers (10 to 12 miles).

4. Distribution by continuous current, called in series, can be applied to larger lines, especially if water power is available, but this system presented the difficulty, which is always found in distribution, of disturbing the whole system of travel, and can not be advised when the density of traffic is very variable.

5. For these reasons distribution by polyphase currents with converter stations converting the current into a continuous one and feeding into the lines at different points presents the greatest advantage for lines on which the travel is dense and variable, the trains heavy, and the lines long, 20 to 30 kilometers (12 to 20 miles); and distant water powers can also be employed in this way.

6. As to direct distribution by polyphase currents to motors with rotating fields

on the cars, it may be said that this method seems only satisfactory when applied to railroads which are independent of urban systems and laid out on special rights of way.

This question was considered by the congress to be so general, and the difficulty of presenting exact conclusions being so great, that no vote could be properly taken on the report; so, after some discussion, the next question was taken up.

This question was a long one, and called for a complete discussion of the practicability of the so-called Falk (cast-welded) joint from all standpoints. The reporter, M. Fischer Dick, Berlin, had collected considerable data from both American and European roads, and spoke in the highest terms of the success of this joint as to durability, and while each joint costs a rather large sum, still by this method the costly electrical connections were omitted. In general, the reporter considered that the introduction of the joint was a mark of progress, and the congress adopted this conclusion.

The seventh question, which was, What progress has been realized in traction by storage batteries from the point of view of the construction capacity and reduction of weight of the batteries, of the durability and cost of maintenance, and of their application, practically and economically? provoked more discussion than any other question brought before the congress. The reporters MM. Broca and Johannet, Paris, after a careful summary of the reports made to them, came to the conclusion that traction by storage batteries was only to be employed when it was impossible to use the overhead wire, but that in cases where such was prohibited the use of storage batteries had advantages over the use of underground conductors.

The subject was discussed by MM. Jausseu (Brussels), Boulvin (Boulogne), Mieke (Berlin), Râlel (Hamburg), d'Hoop (Brussels), Kohler (Berlin), Mommerqué (Paris), and Bertini (Milan), all presenting objections to the system of storage batteries from practical operating standpoints, as well as from the standpoint of cost. M. Kruger, of Hanover, was the only defender of the use of batteries, and in his remarks he stated that having been forced to use the system in the center of the city, he had sought to obtain the best results possible, and he claimed distinct progress and reasonable cost for the system employed in combination with the overhead wire in the suburbs.

As a result of the discussion certain conclusions, as follows, were drawn up and unanimously adopted by the congress: The congress of tramways, after having heard the reports of MM. Broca and Johannet and the discussion which has been based upon it, considers, without taking into consideration the high cost of traction by storage batteries, and looked at from the single standpoint of public duties and the public service, that this method of traction does not insure to a sufficient degree the regularity and elasticity necessary for the increasing service of the transportation of the public within large communities. The congress also considers that up to this time there

has been no important progress realized in traction by storage batteries. The congress also considers that traction by storage batteries is much less sure and much more burdensome than traction by overhead wire, and ought only to be looked at as applicable in certain very special and very especial cases where it is required.

The eighth question was, What improvements have been introduced in methods of heating cars on suburban lines and the cost of their maintenance and operation. The reporter, M. de Burlet, of Brussels, claimed that a distinction should be clearly made between urban and suburban lines, and that for the former no heat was required. As the latter he considered that no progress had been recently made, and advised the reference of the question to the next congress, and this recommendation was adopted.

The ninth question was as follows: Should the secondary railroads be operated preferably by the companies to which they belong, or by the large railways to which they are tributary. The reporter was M. Liffer, of Vienna. His conclusions, which, after amendment by the congress, were adopted, were as follows: That it is impossible to lay down any rules for this subject, and that each special case must be considered in relation to the local and special conditions.

The tenth question related to the establishment of a standard by which the different factors entering into the operation of an electric traction plant could be fixed, and the reporter on this was M. Macloskie, of Paris. The Congress considered that so far no sufficient agreement had been reached, and, while interested in the method used by the reporter to designate the motors employed, it referred the whole question to the next congress.

The last question considered related to new experiences with brakes on tramways having mechanical traction, and this was reported on by M. Mommerqué, of Paris. Little that was new was brought forward, but all were of the opinion that both mechanical and hand brakes were necessary. It was stated that in Paris every car was furnished with five brakes, three to be used by the motorman and two by the conductor, but that in spite of this many accidents had occurred. The question being one of great importance, it was referred to the next congress with the request to the companies to collect all the information possible.

During the congress excursions were made to the exposition at Vincennes, to the Metropolitan (underground) road, to the electric underground railway of the Chemin de fer d'Orléans, to the air-compressor plant of the Compagnie Générale des Omnibus at Billancourt, and to the electric station of the Ouest, Paris, at Moulineaux.

The next congress will be held in 1902 and probably in London, and many members expressed a wish that an invitation might soon be extended to the Permanent International Union of Tramways to meet in America in connection with the American Street Railway Association.

REPORT ON THE CONGRESS FOR THE UNIFICATION OF THE GOLD AND SILVER STANDARDS.

By CHARLES F. GREENE, *Delegate*.

On May 22, 1900, I was appointed official delegate of the United States to "the international congress for the unification of the gold and silver standards," to be held in Paris from June 11 to 13, inclusive, and it becomes my duty and pleasure to give a brief report of its work.

The organizing committee consisted of the following gentlemen:

President, M. Louis Aucoc, president of the *Chambre Syndicale* of the Jewelers and Silversmiths of Paris; president of the jury class 95 (jewelry) at the Paris International Exhibition of 1900.

Vice-presidents, M. Rodanet, member of the Paris Chamber of Commerce, president of the *Chambre Syndicale* of Watchmakers, president of the jury class 96 (watches) at the Paris International Exhibition, 1900. M. Boin, member of the Paris Chamber of Commerce; president of the jury class 94 (gold and silversmithing) at the Paris International Exhibition, 1900.

Secretary-general, M. A. Debain, ex-vice-president of the "*Chambre Syndicale*" of the jewelers and silversmiths of Paris; president of the syndicate of working silversmiths.

Assistant secretary and treasurer, M. Langoulant, vice-president of the "*Chambre Syndicale*" of the jewelers and silversmiths of Paris; member of the jury committee class '95 (jewelry) at the Paris International Exhibition, 1900.

In addition to the above named there were twenty original French members of the committee, all prominently connected with the different branches of the industries in whose interests the congress had been called. The above, together with the official delegates from the different countries (among which were Germany, Austria, Russia, Switzerland, and the United States) and adherents, both French and foreign, formed a most representative body.

The congress was opened on June 11, 1900, and at once proceeded to the election of its officers, with the following result:

President, M. Louis Aucoc, France.

Vice-presidents, M. Paul Dislère, France; M. Arnauné, France; M. Gondy, France; M. Lebdekine, Russia; M. Mader, Austria; M. Rodanet, France.

Secretary-general, M. A. Debain, France.

Secretaries, M. Savoie, Switzerland; M. Lippmann, France; M. Langoulant, France; M. Linzler, France; M. Charles F. Greene, United States.

The programme for the congress, as presented by the organizing committee, had for its object the study of the various standardizing

systems which govern the jewelry, watchmaking, and silversmithing industries, and to ascertain what reforms should be introduced in order to reduce to a minimum the multitudinous standards now in use in different countries.

This general scheme was subdivided into five heads, as follows:

1. To study the points of difference in the standards of gold and silver employed in the industries above mentioned, in different countries, and to ascertain the reasons which led to the adoption of the present proportion of fine metal in each of the different alloys in use.

2. To consider the means most likely to conduce to a general adoption of uniform standards which would be vouched for by a Government stamped mark.

3. To study a plan for an international convention whose object would be to obtain for the guarantee stamp of each country the right of admission into, and recognition by, all other countries; all articles bearing these stamps, being henceforward freed from the necessity of undergoing a fresh assay, would merely pay the entry duties demanded by law.

4. To study the various systems of control and processes of assay in force in the different countries and to aim for the unification of these methods in order to prevent all errors in the fixing of standards.

5. To publish an international report on the regulations in force concerning the control and trade in gold and silver in the countries forming part of the convention.

The congress was opened on June 11 with an interesting paper by M. Henin, vice-president of the "Chambre Syndicale" of jewelers, etc., of Paris, in which he set forth, from the point of view of a silversmith, the importance of the adoption of uniform international standards of qualities and modes of assaying gold and silver. A prolonged discussion took place, in which MM. Dislère, who is president of one of the sections of the council of state and member of the council of the order of the Legion of Honor; Boin; Arnauné, director of the mint in Paris; Riche, member of the Academy of Medicine and director of the assay department of the mint, and Lippmann, took part.

M. Langoulant then read a paper on the same subject from the point of view of the working jeweler.

M. Gilbert described in a most lucid and scientific manner the methods of assaying used at the "Bureaux de Garantie" in France, and which had been adopted by several European countries. He advocated warmly their general adoption.

Other papers were presented by M. Mader, vice-president, and MM. Savoie and Lippmann, all having, except in certain unimportant details, the same object in view.

During the afternoon a most interesting and instructive visit was enjoyed at the Paris mint and assay office, under the guidance of M. Arnauné, the director.

June 12, congress convened at 10 a. m.

Continuing the previous day's discussion, M. Antoine, a watch manufacturer of Besançon, argued the question from the point of view of his particular trade, and declared himself opposed to all regulations,

claiming that the different laws in connection with "garantie" were born of fiscal needs and not from a solicitude for the public welfare. M. Antoine seemed to espouse the cause of the exporters of cheap watches and not to confine himself to a general review of the question, and his position found little favor with the majority present.

M. Rodanet described the disadvantage arising from fine pieces of jewelry and watches being damaged at the mint by scraping and other similar treatment in testing, and he urged the adoption of an international stamp that would be accepted as denoting the quality of the gold or silver.

At 2 p. m. an interesting visit was paid to the establishment of M. Eugene Gilbert, to see the process of refining sweepings, ashes, etc.

June 13, at 10 a. m., the members of the congress visited the exhibition of gold mining as practiced in the Transvaal, when the different processes of extracting gold from the ore were shown and explained by M. Bousquet, mining engineer. They also visited the subterranean mines under the Trocadéro.

At 3 p. m. the last sitting of the congress was held, when a most interesting address was given by M. Dislère, in which he insisted upon the maintenance of a system of regulation in France, and advocated the creation of a technical commission composed of an equal number of representatives of the industry and of members of the administration, to whom should be referred all questions in dispute of a penal nature before proceeding to legal action.

M. Dislère's address was received with unanimous approval.

M. Debain, the highly esteemed secretary-general of the congress, then read his conclusions. After having stated that ten governments were represented at the congress, and having given a summarized report of the debates, he specified the points upon which the members of the congress seemed to be in accord, notably the following:

1. The creation of international standard symbols.
2. Uniformity of methods of assay.
3. Stamping the quality in thousandths upon each article.
4. Formation of a permanent international commission.

After considerable discussion the following resolutions were unanimously adopted:

1. The elaboration of an international convention.
2. Articles of gold or silver introduced into a country forming part of the union

shall not be liable to assay if they bear the official stamp of the country of origin, with mention of their quality in thousandths.

This arrangement not to interfere with the right of States:

1. To refuse admission to articles of lower quality than the minimum legal standard.
2. To prove by a stamp the payment of the guarantee duty.
3. The methods of assay shall be the same in all the contracting countries.

4. A repertory of regulations in force in connection with the "contrôle" in the different contracting countries shall be prepared and shall contain illustrations of the government stamps employed in each country.

5. The bureau of this congress is maintained in office as a "permanent international committee upon gold and silver standards."

President Aucoc then warmly thanked his colleagues for the assistance which they had given him and for the spirit of conciliation which had animated them during the debates. He congratulated them upon the results obtained, which permitted him to predict a prosperous future for the industries in precious metals. He further expressed the hope that a new congress would be held in 1901 in Vienna or Geneva. The congress then adjourned.

Such, in substance, is the report of one of the many interesting congresses held in Paris this year. How interesting it was can not perhaps be at first appreciated fully by the casual reader, but it can not fail to interest greatly those among our fellow countrymen who are engaged in the important industries of manufacturing jewelry or silverware and whose ambition it is to see these grow more and more important, keeping step with the other and greater industries of our country.

Why should there not be increased demands in Europe and elsewhere for our gold and silver manufactures, as well as for those of steel, iron, and copper? There certainly should be and will be if we properly educate ourselves to know the wants of European markets and prepare ourselves to cater to those wants.

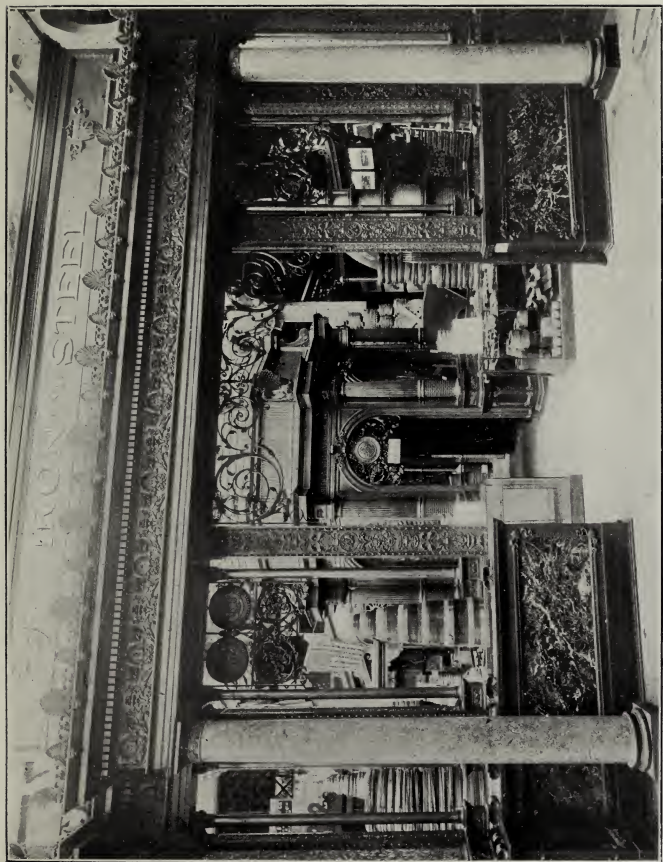
One of the greatest drawbacks in the past and at the present time to a successful export trade in our gold and silver wares is the fact that we have no standard of quality. This is all very well for ourselves at home, where we are quite satisfied with the guarantee of the house from whom we buy our goods, and we are happy not to be taxed for a guarantee that we do not need or care for.

But if we send our wares to France, for example, or to any other European country where the "contrôle" is obligatory we at once encounter obstacles.

No article in gold lower in quality than 18 carats, or 0.750 fine, is admitted into France, and in order to determine its quality before affixing the stamp (poinçon d'Etat) it must be tested. This testing is sometimes done by "touchstone," but more often by scraping. The article is frequently injured and now and again ruined. This risk is particularly great in the case of fragile and delicate articles such as are enameled and pieces set with stones. The same rule applies to silver articles, and there is no redress in case of damage.

This unfortunate condition of affairs prompted the calling of a congress, and the moment when so many countries were represented at the Exposition was most opportune.

The body of men who composed it was one of the most intelligent



UNITED STATES IRON AND STEEL EXHIBIT, GROUND FLOOR, PALACE OF MINING AND METALLURGY, GROUP XI.

VEGETARIAN.

The purpose of the international vegetarian congress was to afford vegetarians from all countries an opportunity to compare the results of their observations as to the best methods of disseminating information regarding the "rational and hygienic method of alimentation."

The special topics proposed for discussion included individual hygiene; the amelioration and future of the human race; physical and moral education of children; the combat against such diseases as tuberculosis and alcoholism, which add continually to the number of their victims; the improvement of the condition of the working classes; the application of the principles of vegetarianism to the cure of diseases; improvements in the methods of cooking vegetable foods; vegetarianism from a moral and sociological point of view; various questions that are related to vegetarianism.

REPORT ON THE CONGRESS OF VITICULTURE.

By LEE J. VANCE,

Editor of the American Wine Press.

The Paris Exposition of 1900 will be noted for one important feature, namely, for the great number of international congresses held in connection with the Universal Exposition. As at the World's Fair at Chicago in 1893, so at Paris in 1900, these congresses served a good purpose. They brought together the most eminent men and women, each in their separate lines of work, from all over the world. The interchange of ideas and opinions and the discussions that took place at the meetings could not fail to be of practical interest and benefit.

The international congress of viticulture met in the Palais du Congrès on the morning of June 13, about 200 persons being present. There were official delegates from Austria, Spain, United States, Hungary, Italy, Mexico, Roumania, Russia, and Turkey. There were also delegates from agricultural and viticultural societies of Germany, Hungary, Italy, Portugal, and Switzerland.

The following officers were elected:

Honorary presidents, MM. Meline, Goniot, Turrell.

President, M. Tisserand.

Vice-presidents, Comte du Perier de Larsan, Marquis de Barbentane, St. René Taillandier, Chandon de Brialles, and Prillieux, all of France; Baron de Bohus, of Hungary; B. Taïroff, of Russia; M. Pavoncelli, of Italy; E. Mach, of Austria; Franz Buhl, of Germany; Del Sarto, of Spain; M. Ecklin, of Turkey; M. de Candolle, of Switzerland; M. Da Costa, of Portugal; M. Ficoleano, of Roumania.

Secretary-general, M. Prosper Gervais; assistant secretary-general, M. Jean Cazelles.

Treasurer, M. Pierre Causse.

PROGRAMME OF THE CONGRESS.

The following papers were read and discussed:

- "The Phylloxera crisis in France," by Professor Foëx.
- "The reconstruction of the vineyards," by M. Prosper Gervais.
- "Diseases of the vine," by M. Pierre Viala.
- "Diseases of wines," by M. Gayon.
- "Wine and hygiene," by Dr. Clarrin.

The paper by Professor Foëx was an interesting history of the "Phylloxera crisis in France." He traced the discovery and origin of this terrible scourge of the vineyards; how the insect first made its appearance about the year 1863 in the vineyards of the Bas Rhône; how by the year 1867 the damage had become so great as to cause a general panic among French vineyardists, and how the march of Phylloxera went on from one district to another up to the year 1880, when the remedies against this deadly insect enemy of the vine began to check its course. Meanwhile, from 1867 to 1880, thousands and tens of thousands acres of valuable vineyards had been destroyed, and many of the growers ruined financially.

Mr. Foëx then reviewed the methods used against Phylloxera: (1) The insecticides, such as carbon sulphur, and sulphur carbonate of potassium, together with the digging up and burning the affected stock. (2) The methods of submersion, irrigation in summer, the planting of European vines in sandy, gravelly soils, and last, but most important, the use of native American vines. The late Professor Riley, of the United States Department of Agriculture, was one of the first to identify positively that the Phylloxera of France was the same as the insect found in America. The vital difference was and is that our native American vines are "resistant" to the attacks of the Phylloxera.

The result is that the vineyards of France have been gradually reconstructed during the past twenty years by the use of American stock. The varieties of American vines most used for grafting are: *Riparia Gloire*, *R. grand glabre*, *Rupestris Martin*, *Riparia-Rupestris*, *Rupestris du Lot*, *Berlandieri*, etc. Thus M. Foëx concluded that the most certain and most general solution of the Phylloxera problem in France was to be found in the reconstruction of the vineyards by American vines.

The paper by M. Prosper Gervais on the "Reconstruction of the vineyards of France" was a long discussion as to the best vines, taking into account resistance to the Phylloxera, adaptation to climate and soil, and the kind of graft.

The writer took up the different varieties of vines and pointed out those best adapted to different soils, such as calcareous soils, heavy soils, wet and dry soils. The discussion that followed brought out nothing new. The general opinion seemed to be that Franco-American

for a "resistant" did not give as good results as a pure American stock.

The report by M. Viala called attention that there had been few new diseases of the vine in late years. Almost all of these diseases were old ones. Thus "oïdium," which at one time seriously threatened the vineyards, could be kept in check by sulphur and permanganate of potash. The other most common diseases are mildew, black rot, anthracnose, and secondary parasites, as the cochénille of Chile, etc. For mildew use sulphate of copper, and the same for black rot.

At the next meeting, on June 18, M. Ottavi, a delegate from Italy, gave an interesting account of cannonading to prevent heavy storms, especially hailstorms, from visiting the vineyard districts and destroying the crops. It should be said that for years the grape growers of France and Italy almost every season lose heavily from hail, which usually comes late in the summer, and thus does great damage.

In 1889 experiments were conducted in Italy with a total number of 2,000 cannons, and the results were most satisfactory to the vine growers. This year (1900) during July and August the clouds were bombarded by a total number of 10,000 cannons in the valley of the Po, while there were used 1,000 cannons each in the provinces of Brescia, in Bergamo, in Verona, in Treviso, and in Venetia. The cannons were supplied by the Government and by societies which have been formed to fight hailstorms, and each grower contributes so much, according to his acreage of vineyard. This year, also, cloud firing was practiced for the first time in the Beaujolais district in France, and the storms were either broken up or were light. It is expected that these experiments will be very general next year in Italy and in France, and it is predicted that means will soon be discovered to prevent heavy frosts.

A valuable paper for the wine maker was that by M. Gayon on the "Diseases of wines." The author showed how wine, which is a most complex chemical product, decomposes more or less by the action of microbes or ferments, loses its properties and becomes diseased. In such a state wine is said to be "sick." It is really affected by a malady, as by a contagious disease, for when sound wine was added to "sick wine," that also became bad or diseased. The whole paper is well worth reading, and those who are interested in the subject will find the report printed in extenso in the recently published proceedings of the congress.

The closing session of the viticultural congress was marked by an able report on "Wine and hygiene," by Dr. Charrin, professor of the Faculté de Médecine de Paris, et au collège de France. The author started out by calling attention to the powerful movement in France

and elsewhere against "alcoholism." This movement was not only against the use of alcohol, but all fermented drinks, wines included. He said that the word "hygiene" had been used as an argument, and some doctors had forbidden the use of wines. However, for himself he would not go to that extent. He was opposed not to the use but to the abuse of alcoholic drinks. He agreed with those who attacked what he called "the dangerous drinks," but he did not agree with those who put wines in that class. He doubted if it could be shown that good, pure wines did any serious harm.

Dr. Charrin pointed out that alcoholism had developed largely since the phylloxera crisis in France, which made wine somewhat scarce and dear. Thus, thousands of people being deprived of wine, and craving some stimulant, took to strong drinks and liquors, such as absinthe. There was no doubt that the commercial alcohol, such as used in trade, was largely responsible for the spread of alcoholism, but those who wished to check the trouble should encourage instead the use of good, pure, light wines, which in moderate quantities had no bad effect on the human system.

The reading of Dr. Charrin's report was followed by an interesting discussion, and many additional facts relating to the beneficial uses of wines as conducive to temperance were brought out.

M. le Comte du Perrier de Larsan, deputy from the Gironde and member of the international jury of awards, called attention of the members of the congress that he had found many foreign wines and brandies at the Exposition bearing French names, and this he declared to be a fraud and an attempt to trade upon the name and reputation of well-known brands and marks. He had addressed a letter of protest to M. Kester, president of the jury, class 60, which he read. Thereupon it was stated that the jury of class 60 had passed a resolution declining to give an award to wines and brandies with a label having a "false indication of origin." The congress also passed a resolution asking for an international law, having for its object to reserve exclusively to each country and every producer of wines and brandies, the name, origin, and mark of their products, and to prosecute rigorously all imitations and false labelings.

The congress passed another resolution, proposing the establishment of an international commission of ampelography. After congratulating the members on the great success of the meeting, the president, M. Tisserand, declared the sessions of the international congress of viticulture closed.

The programme of the international congress of viticulture included four excursions, under the personal direction of M. Gervais, to the principal viticultural regions of France, namely, Bordelais, Midi, Bourgogne, Champagne.

REPORT ON THE CONGRESS OF WINES AND LIQUORS.

By LEE J. VANCE, *Editor of the American Wine Press.*

The international congress of the commerce in wines, spirits, and liquors was held at Paris from the 16th to the 21st of July, 1900, in connection with the Universal Exposition.

The following countries sent delegates: Austria, Belgium, Italy, Roumania, Russia, Spain, Siam, Switzerland, and the United States. The writer had the honor to be an official delegate from the United States, and took much interest in the proceedings of the congress.

The meetings were held in the rooms of the National Geographical Society, on the Faubourg St. Germain. M. Millerand, minister of commerce and industry, presided, and, after a short address of welcome to the delegates, M. Hartmann, president of the committee of organization, opened the proceedings and stated the objects of the congress.

THE PROGRAMME OF THE CONGRESS.

This was divided into five sections, as follows:

1. *Statistics*.—A discussion of the production, the consumption, the importation, and the exportation of all beverages in different countries.

2. *Fiscal systems*.—(a) The different methods of taxation on production, on circulation, and on consumption; (b) the different custom systems—tax on volume, on weight, and ad valorem. The possibility of adopting one international system.

3. *Transportation*.—The condition of transportation; shipments by sea, by rail; the responsibility of shippers, insurance, etc. The possibility of simplifying these methods.

4. *Legislation*.—The different laws of countries regarding beverages, especially those touching on the protection of brands and names of localities, the recognition of the country, the suppression of counterfeits, and of falsification or adulteration. The possibility of unifying these different laws.

Hygiene.—The effect in food of wines and of other drinks. Comparison of the effects produced by the consumption of fermented drinks and of spirituous beverages.

For the purpose of considering carefully each of these five important subjects, the delegates were organized in five separate committees, which elected a president, vice-presidents, and a secretary or recorder. Thus, papers were presented and read before the appropriate committee. Then the committees discussed the various questions in their order, and presented the results of its work and usually resolutions to the general meeting of all the delegates. Two days were thus spent by the subcommittees, and in this way a large amount of work was accomplished in a short time.

A brief summary of the questions and papers before the different sections of the congress may be given here, as follows:

Section of statistics.—A paper was submitted by M. Kehrig, of Bordeaux, in which he strongly urged the necessity of establishing a bureau of statistics for the wine and spirit trade in every country. Thereupon a resolution was proposed and adopted by

the congress to the effect that a permanent bureau be established in connection with the congress, and that a committee of correspondence be formed.

The following resolution was introduced and adopted: That congress invite the governments of every country interested—

(1) To indicate as soon as possible their methods for collecting statistics, and to agree upon the same methods.

(2) To take the necessary measures for avoiding confusion in making statistics, so as to indicate the production of each item having connection with wines and spirits, and their derivatives.

Section of fiscal systems.—There were a number of resolutions passed concerning changes in the laws and in the taxes and duties on wines and liquors. Many of these propositions related to the French system, and would not be of interest to our people.

An important question discussed by the congress was that of limiting right to traffic in wines. The general opinion seemed to be that it was not desirable, for many reasons, to abolish this right. It was urged that only a light tax be put on wines, while alcohol should continue to bear the heavy tax.

A resolution was passed urging the customs of the different countries to have the same methods of analysis, and to use the same instruments.

Section of transportation.—An interesting paper on the methods of transportation by rail was read by M. Lamy, of Paris. Many of the propositions advocated would not be applicable to shipments in the United States, and so they need not be noted.

Section of legislation.—Several interesting papers proposing changes in the present laws were read and discussed. M. Des Clozeaux, one of the editors of the *Monitor Vénicole*, proposed uniform methods and custom laws; the doing away with ad valorem duties; the unification of the methods of analysis, of the addition of alcohol, of the extract, and of the acidity of wines.

A resolution embodying the above and other points was adopted. A very strong resolution against the bottlers of fabricated or adulterated drinks was also adopted.

The question of protecting brands and names of localities as trademarks for wines and liquors was next considered. After a very long and full discussion, the congress passed a resolution to this effect: That something should be done for the protection of industrial property, and to this end there should be an international agreement, or understanding, whereby certain industrial trade-marks and names should be protected, and counterfeits suppressed.

Section of hygiene.—A memoir was read by M. Maurigney, of Bordeaux, concerning the use of sulphur and the regulation of sulphurous acid. After some discussion the congress passed this resolution:

That sulphur is indispensable to the proper preservation of wine, and that it was necessary to make an addition of a sufficient quantity. That it was absolutely harmless in the doses in which it is generally used.

The congress also resolved: That it was admissible to use 150 milligrammes free sulphurous acid per liter. That the total sulphurous acid be not regulated. That sulphate of potash always be added without previous oxidation of the sulphurous acid.

Several papers were presented, and they treated of wine and alcohol from the standpoint of the doctor. That by Dr. Mauriac, of Bordeaux, treated particularly of wine, and he stated as his conclusion that good, pure wine in moderate quantity had no injurious effect on the human system.

The leading paper on this subject was offered by Dr. de Cournelles, of Paris. He showed how the opinions of doctors had from time to

time changed on the subject and how the latest investigations went to prove that the alcohol in the ordinary wines consumed by the French people had never done them any harm. He said that it was necessary to distinguish between good and bad alcohol and between use and abuse. It was voted that this paper by Dr. de Cournelles, with some modification, be printed in full in the report of the congress.

Before closing the members of the congress passed a resolution of thanks to the president, M. Hartmann, and to the secretary-general, M. Dubosc.

In conclusion, this was the first time that an international congress had met to examine the conditions and methods of the traffic or trade in wines, spirits, and liqueurs of the world.

The two principal objects of the congress may be stated thus: First, to make as uniform as possible legislation, taxation, customs, weights and measures, etc., in the common interest of producers and dealers in beverages all over the world. Second, to combine for mutual protection against the attacks made on the wine and spirit trade.

CONGRESS OF COMMERCE, OF WINE, SPIRITS, AND LIQUORS.

The congress on the commerce of wine, spirits, and liquors discussed the production, consumption, importation, and sales of beverages of all kinds in different countries.

The various systems of imposing duties and the possibility of adopting an international rate of duty.

Methods of transportation, by water and rail, and the responsibility of carriers and the methods of insurance in transit.

Laws of various countries relative to the traffic in drinks and beverages, especially those that touch upon the protection of labels and local names that give evidence of origin, the suppression of counterfeits and adulterated drinks.

The effect of wines and other beverages upon the health of the consumer and a comparison of the relative effects of fermented and distilled drinks.

In order to secure the best results from the discussion of the topics named, custom officials and health officers were invited to attend as guests of the congress and to give to it the benefit of their observations.

REPORT ON THE CONGRESS OF WOMAN'S WORKS AND INSTITUTIONS.

By MRS. LINDA HULL LARNED,

President of the National Household Economic Association.

The congress held from June 18 to 23, inclusive, called the works and institutions of women, was philanthropic, and a majority of its members leaders of progress along conservative lines. They demand

better laws for women and are deeply concerned with their higher education. Every subject pertaining to women that has any possible foothold on the face of the earth, or even a visionary right to be, was discussed and resolved in its proper time. As far as the United States was concerned, the delegation was small, for while many were chosen, but few came. Consequently the aroma of Americanism was not apparent. In fact the whole atmosphere of the congress was purely French, barring occasional whiffs of foreign countries. With few exceptions the addresses were all in French, and the presiding officers were largely sustained by the masculine element, who, speaking often and vehemently upon their rousing questions, were vociferously applauded or ignominiously hissed. This showed feeling on the part of the audience, to say the least.

It must be thoroughly understood that the feeling of this assemblage was conservative and what they designate the feminine or *féminières*, while the congress which was held in September was eminently a feminine movement, which, translated in English, means woman's rights. Nevertheless, many advocates of suffrage were heard most eloquently pleading their cause, and the floor was often given to Madame Vincent, the Susan B. Anthony of France. This clever woman, however, has not the sweet persuasive voice and gracious personality of our much respected Miss Anthony, who has done so much for all women, in spite of her advanced views.

The entire congress was extremely interesting and was ably guided through many dangerous situations by Mlle. Monod, the president, who belongs to one of the most distinguished of French Protestant families. She was occasionally relieved from her onerous duties by the honorary president, Mme. Bogelot, who represented the French women at the Columbian congresses of 1893. She wears the cross of the Legion of Honor, deservedly won by her reform work in the prisons of St. Lazare.

Much credit must be given to Mme. Pegard, the secretary-general, who, though she spoke only French, nevertheless held in her hands the entire working power of the convention.

The congress was opened by M. Leopold Mabillean, director of the Musée Social, who assured the delegates of the sympathy of his confrères and extolled prudence and moderation, not doubting that these women would prove their wisdom and their right and would meet with success in triumphing over all of their difficulties. Then followed the election of a definitive bureau for the congress—*Mésdames* Bogelot and May Wright Sewall and Jules Simon—and the regular officers of this the second international congress of the works and institutions of woman. The first congress was in 1889.

Mlle. Monod followed with an eloquent address, which was received with reiterated applause. Then Mme. Bogelot addressed the delegates

and strangers and extended to them a most hearty welcome from their French sisters. There were responses from the foreign delegates, those present being: Madame Van Reenen-Volter, sent by the Queen of Holland; Mme. Johanno Meyer, from the Danish Government; Mlle. Popelin, from Belgium; Mme. Semitichkine, from Russia; Frau Stritt, from Germany; Mme. Dandurand, from Canada; Mme. Vidau, from Switzerland; Mme. Theimer, from Austria; and Mme. Parren, from Greece. Much regret was expressed that Mme. May Wright Sewall had not yet arrived, and I believe there was no response from the United States, as none of the delegates were present.

The president closed the first seance by asking the assemblage to send two telegrams—one to President and Madame Loubet, expressing the respectful homage of the congress of works and institutions feminine; and the other to Mme. Jules Simon, as a souvenir of the service rendered by her illustrious husband to the congress in 1889, and for the cause of women.

The topics which filled the five sections for the morning reports were—

1. Philanthropy and social economy.
2. Legislation and morality.
3. Individual education, social education, and pedagogy.
4. Work; and fifth section, arts, sciences, and letters.

The section on philanthropy was filled with reports of benevolent work, and perhaps the most interesting is that of Russia, called the "Institution of the Empress Marie." This covers all of the national philanthropy; it was founded by her over a hundred years ago, and although so much has been added since her time it still bears her name. These reports show that over \$12,000,000 a year are expended for the support of these institutions of l'Impératrice Marie.

A few gleanings from the other reports are: A society in Lyons, composed of both men and women, to assist young girls of good character who unfortunately become mothers; a benevolent society to assist permanently unfortunate ones in general in Paris, expending about 50,000 francs a year; a report of the day nurseries, asking that nursing children should be kept away from the older ones and cared for in separate buildings; of 350 societies in France, representing seventy-five hundred young girls, whose object is to help the aged, the sick, and the working women; in Poland, 70 different societies, for the relief of all kinds of suffering in both young and old; a report of the combined societies, called "charitable assistance," who try to secure work for the needy ones or to send them back to their own countries; a society from Lemousine of girls who are trying to help those of their own city who are dying in Paris; a society of women, employees of the postal savings bank, for mutual assistance, which includes their families; a house in Paris for the protection of young girls without

shelter. Other reports were read from societies in Switzerland to rescue girls from the path of wrongdoing; one in Paris, to assist young women who are poor or in danger of evil communication; societies in Germany to rescue from police stations girls who have been arrested for drunkenness; one in Sweden, aiming to ameliorate the moral and physical conditions of imprisoned women; a society to help working women and girls; another endeavoring to secure direct orders from large shops for women in their care who are without work; and still another showing how women can conciliate different classes of people by treating their domestics and their visitors with kindness and simplifying their own lives, the luxury of which provokes the class less comfortable—this is called in France “*Le Rapprochement des Classes*,” and all reports tending in this direction were listened to with avidity. Then we have an association in Alsace whose aim is to visit the sick and poor, and whose practical work includes a school for domestics held every evening, where they learn to cook a repast which they take home to their families; also to sew, to mend, etc. This school costs the association \$1,000 a year. Several reports asking for improved conditions for houses of correction; then reports of the struggle against alcoholism; hospital improvements; and a fine address upon “*Hull House*,” by Miss Jane Addams, who was one of the jurors on social economy.

In the second section—legislation and morals—we have an enormous budget of reports, which seem to be of the utmost importance to our foreign friends. Among the few which may be mentioned: Comments of the fact that in Germany the husband possesses the fortune of his wife, but can not spend it; a demand for equal rights of the father and mother regarding the natural child; a statement from England that since 1856 the law had given married women the right to their own property; several reports asking for better legislation concerning natural children, fallen women, and kindred subjects, which resulted in an appeal from the congress that the laws concerning prostitution and drunkenness should be put into the hands of a specialist, which report was brought to a climax by an appeal from Germany against the difference in laws concerning the morals of men and women, and terminated by asking that the political vote be given to women.

Section third—on education—is a relief, as it gives us reports on special preparation of teachers in France; on the normal school for music teachers; on practical education; an appeal for identical education for both men and women; a report from the mutual association for the education of women; the rôle of women in the education of boys; the inspection and administration of scholastic establishments, which finished by supplementary reports on institutions of women in Spain; women and superior instruction in Russia, and the popular University of Montpellier.

The fourth section, which is work, contains much which we may care to know. It was stated that the wages of working women in Germany, in Frankfurt sur Main, are very low, because there are no women's societies to make them discontented, and their contentment is the greatest obstacle to their emancipation. They also find that this state of affairs is especially noticeable in domestic industry, and the reporter continued with suggestions of radical reform for domestic industry or else its complete suppression. Then followed a report from a man in France, asking that women should receive the same salary as men for doing the same work, and for liberty of work for all; an article on workmen's gardens, which claims that in all of the large cities of France tillable ground is let or given to the poor, providing they cultivate it. Next we heard something most peculiar, called the "Sommelières of Munich," who have formed a professional syndicate to protect themselves from the encroachments of the tourists and the Germans from the north. These Sommelières are girls—brave daughters of the people—and are waitresses in the beer halls of Munich. The particular grievance of these girls is that the public, augmented by those above-mentioned foreign invaders, demands tinselled palace cafés and more piquant and luxuriant toilettes of the young women, and unless these fresh and rustic maidens—so celebrated in painting and literature—protect their rights they will find themselves supplanted by the frail beauties of the dance halls. A call was made for agricultural and horticultural schools for women everywhere similar to those in England and France.

Other topics discussed were: Liberty of work for women; economic reasons for the debasement of the salaries of women (a few men talked on this subject); some means of favoring the work of household domestics, and cooperative societies of production.

The fifth section was devoted to art, science, and letters. The rôle of women in the arts during the last fifty years; women in decorative and industrial arts were discussed, upon which a masterly address was given by the Countess Maupeou; the actual situation of women in the science of mathematics, astronomy, physics, chemistry, natural history, and medicine, and practical means of teaching women in the cities and in the country the hygiene of the family and the child; the latter embraced a report on the necessity of the hygiene of embryology. Then there were questions on women in music and art; an address by Dr. Helena Gaboriau, of France, advising that this congress should create a committee to ask that the study of the hygiene of the family and of the child should be obligatory in the primary and secondary grades of every girl's education. There were many reports of women as doctors of medicine in different countries, and even one upon the position of the woman doctor in society. And we must not forget the demands for dress reform, and Mme. Vincent's strong appeal for more municipal washhouses and baths.

The most important papers were given in the afternoon meetings. Among these addresses we heard from the French-Canadian women through Mme. Dandurand, of the Austrian law in regard to women; from Frau Stritt, president of the council of women in Germany; of the Greek women during the war; household economics in the United States, by the president of the National Household Economic Association; of the Armenian women; the Women's National Indian Association; the Alliance of Women Oriental and Occidental, by Mme. Loyson, the wife of Charles Loyson, the famous "Père Hyacinth;" the emancipation of the Mussulman women; the reform of the civil code in Switzerland; the education, situation, and condition of women in India, in South Africa, and New Zealand. The theme which demanded the most attention from every member of this congress was the right of married women to their own property and earnings. It seems that France is the only country that has not adopted the "married women's property act," as it is called in England. They demand also that woman be allowed to appear on the witness stand, and to dispose of her own earnings as she chooses. This appeal, which was put in circulation, was signed by the Duchess d' Usés, Mlle. Monod, and Mme. Jeanne Schmale.

Mme. Schmale was a most prominent figure at the congress—an English woman, of commanding appearance, whose husband was a French gentleman for many years. She was perfectly familiar with her subject, and stood her ground most admirably when assailed by those who differed with her.

There were a few speakers worthy of mention who were too late to appear in the programme. Among them were: Mrs. Emma Moffett Tyng, of New York, who gave a fine address in perfect French on the "Educational value of women's clubs;" Mrs. Mattox also spoke in good French of the society of American women in London, of which she is the secretary; Mme. Van Reenen-Volter told of her school of industrial education for girls in Holland, of which she is the founder and manager and for which she has received a decoration from Queen Wilhelmina; and a speech from Mrs. May Wright Sewall who, though arriving late, was the guest of honor of this congress.

As to the attitude of this congress of 1900, we agree with Mrs. Croly, who said, "We all mean unity and cooperation and helpfulness, although we may have arrived at different stages upon the same road." The address on household economics interested women in Germany, Holland, and England, and has resulted in affiliation with two of these countries. Canada has been working with us for a number of years, and our recent meeting held in Toronto assures us that women from all lands and of all nationalities may and do unite in these efforts to secure education on all matters pertaining to the betterment of homes.

This must convince us that every convention of earnest, logical, and zealous women is sure to leave us some incentive to perseverance, emulation, and cooperation.

HOUSEHOLD ECONOMICS.

[Address delivered before the Congress of Women's Works and Institutions by Linda Hull Larned.]

The women's congress of the Chicago exhibition of 1893 first awakened the public mind to the fact that matters pertaining to the household were not keeping up with the procession of progress. Therefore a day was appointed in which to investigate this neglected industry, and out of the throes of that meeting was born the organization which bears the comprehensive title of "Household economics."

The objects of this organization are: To promote a more scientific knowledge of the economic and hygienic value of foods, fuel, and clothing, and a more intelligent understanding and demand for correct plumbing, drainage, and ventilation and improved methods of sanitation for our homes, schools, and municipalities; to maintain bureaus of information where there can be an exchange of wants and needs between employer and employed in every department of home and social life; to establish and conduct schools of domestic science for the benefit of both household, employer, and employee, and to urge the adoption of domestic science and industrial arts in all public institutions of learning.

From a small band of earnest workers and logical minds consisting of not more than thirty it has grown to the present proportions, which to-day represents, through thirty States and the affiliated society of Canada, thousands of women who are actively interested in the advancement of scientific knowledge of everything pertaining to the household. The work of this organization is to circulate literature, to induce clubs and individuals to become members, and to assure such converts that information as to methods and means of propagating the cause of household economics will gladly be furnished upon application to members of the executive board. Through the efforts of this board, which consists of thirty State vice-presidents and sixteen directors, we can see tangible results in many and devious ways.

In women's clubs and societies household economics has secured a strong foothold, and has even become a part of the club federation work in at least nine or ten of the States. New York has a large State organization devoted entirely to these aims and objects. The work that has been accomplished by these organizations, and which show tangible results to the public, includes: Improvement in the sanitary conditions of homes, public institutions, and municipalities; manual training and domestic science in the public schools; the establishment and maintenance of schools of domestic science for adults, and an awakened interest throughout the country for all things sanitary and hygienic. Women are beginning to grasp the idea that household economics is not the old-time drudgery of personal attention to the petty details of cooking and cleaning, sewing and patching, but "it is the application of various sciences to the labor of the household, and the systematic adjustment and arrangement of everything appertaining to it." There is also an awakened realization that women everywhere must acquaint themselves with a knowledge of this science if they expect to retain the home, which is such an important factor in civilization, and the family as a unit, upon which depends the success of all nations.

The policy of our national association is to suggest a general course of study, followed by a detailed outline of work which may be manipulated to meet the requirements of each department, club, or member. It also aims to keep a large amount of instructive literature in circulation for the benefit of its members, and may be appealed to for information upon all of these matters. In fact, this organization endeavors to be a clearing house for all household improvements.



I-13. INSTALLATION OF OFFICE FURNITURE, VARIED INDUSTRIES SECTION,
ESPLANADE DES INVALIDES.

Our work is regulated through meetings and conferences. The association holds a public meeting in October of each year to hear reports from States and affiliated societies, to arrange the work of special committees, and to hear addresses upon special subjects pertaining to our propaganda. There is also an unusual gathering of scientific women at Lake Placid Park Club in July of each year, which has resulted in the publication of a syllabus on home economics by the University of the State of New York. This pamphlet is part of the literature put into circulation by the National Household Economic Association.

The president of each State and the president of the national society may be called upon to give personal talks to clubs and societies after the circulating literature has aroused sufficient enthusiasm.

Through our women's clubs and philanthropic institutions, schools of domestic science for those who have gone beyond the school age have appeared in almost every section of the country within the past few years, and many of those affiliated with our association have gained a world-wide reputation. Some of them are endeavoring, with much promise of success, we hear, to not only teach young women to be skilled workers in the noble art of housekeeping, but to give college girls the training which will enable them to enter into the sociological side of settlement work, while fitting others to be model teachers. Some of the colleges are doing this. The smaller schools which are in most places conducted by women's clubs or associations, are showing what practical methods can accomplish. These schools are rarely self-supporting, as their aim is to teach the would-be household employer and the neglected household employee, and they find it necessary to make the cost of tuition to the latter class almost nominal.

Perhaps an important work is that accomplished through the farmers' institutes, as the wives of these sons of the soil have heretofore accepted the visitation of all ills arising from unhygienic surroundings and unsanitary household conditions as the divine rulings of Providence. We know that our most philanthropic work, however, is that of the classes in tenement kitchens. This is a magnanimous uplift for that downtrodden creature, "the woman with the mop," if we are to believe in the existence of her mate, "the man with the hoe." This instruction, if co-related with that of the child in the public-school laboratory, which will be spoken of later, will do much toward solving the perplexing problem of domestic science, and is a great factor in the temperance question.

All women who are working for the benefit of humanity in the slightest degree should add their efforts to those of the brave pioneers who are endeavoring to teach the hordes of young women landing upon our shores with nothing but brawn and muscle to recommend them. And what is much more important, our belated housewives, who until recently have been perfectly satisfied that the only instruction they needed for the business of housekeeping was intuition, which in some mysterious way would descend upon them with the mantle of home making gained through the marriage ring.

Thoughtful people everywhere are beginning to realize that upon the education of our school girls depends the future of our homes, and we almost believe that when the science of household economics is considered a most necessary and vital part of every girl's education, then the work we are striving to do will have been accomplished. Our public school has felt the advance of this practical progress, and although it is the pie that attracts every reformer's finger, manual training has been squeezed in with all the other fads. This of course means carpentry and kindred industries for the boys, cooking, sewing, and house economics for the girls. In many schools they have been keen enough to see that it is no disadvantage for the boys to be taught how to live in a home and that girls would find it no drawback to know how this home should be built. While we can not claim any department of public education as an auxiliary, or connected in any way with our organization, we do take

the credit of having worked and of still working to see this magnificent uplift for the masses added to the curriculum of our free education which is for all classes.

We women, who are particularly interested, however, are on the outlook, and promise that in the near future household economics in the public-school curriculum in the broader, higher sense of the word, will no longer be a fad, but a pertinent and prominent part in every girl's education. This can be accomplished by the practical application of all studies now included in the grammar grades to the laboratory or technical work of the domestic-science department. These departments must be continued in supplementary schools for all of the more favored pupils to step into. Domestic science, then, becomes a trade and domestic art a profession. If the study is applied in this manner and directed by experts in the education of the classes as well as the masses, the future generations of women will be so thoroughly permeated with a practical knowledge of all things pertaining to the home that housekeeping will cease to be a bugbear and domestic service no longer a serious problem.

CONGRESS ON THE LEGAL PROTECTION OF WORKMEN.

This congress was held at the Musée Social from the 25th to the 29th of July. The organizers of this Congress did not wish to submit to a new discussion on the principles of the intervention law in contract labor. This was a question warmly debated at the congress of the legislation of labor, held at Brussels in 1897, and the discussion seemed on the whole useless and without effect. The project of the international association for the legal protection of laborers, however, was undeniably born at the Brussels conference in 1897. During the following three years the idea was never abandoned, and the students of sociology decided to make a special effort for this end at the great Paris Exposition. Such a union seemed destined to hasten and facilitate protective legislation for the laboring men. The result obtained in such a congress, the comparison of experiences, the pointing out of obstacles, and the allaying of apprehensions proves more satisfactory in the long run than the most unassailable abstract reasoning.

The proceedings of the congress showed very plainly the arousing of conscience in civil administration; that all civilized countries now realize their obligation to the workman, the necessity to develop his physical and moral individuality, and to make the conditions of his labor compatible with the highest integrity.

M. Paul Cauwes, professor of the law faculty of the University of Paris, was president of the board of organization, and the most prominent political economists in France and in all European countries took part in the discussion. The programme was conducted along the following outline:

1. The legal limitation of the working day: The study of comparative legislation on this subject—The legal limitation of a day's work for children, boys, and adult men and women—Desirable reforms—Is it practical to hope for a common length of the legal working day in the principal industrial countries of the world?

2. The prohibition of night work: The consequences of night work—The legislation of various countries on the prohibition of night work—Is it advisable to pro-

hibit night work of all classes of workmen, children and boys, and adult men and women?—Should such a prohibition have exceptions in certain industries?—Is a national agreement necessary to stop night work?

3. The inspection of labor: Data of different organizations in different countries for the inspection of labor—Advantages and disadvantages of these organizations—Results obtained concerning the collaboration of workmen in the inspection of labor—Joint inspectors delegated by the workmen, but under the control of proprietors.

4. International Union for the legal protection of workmen: What would be the rôle of such an association?

CONGRESS OF WORKINGMEN'S ASSOCIATION OF PRODUCTION.

The first international congress of workingmen's associations of production (cooperative manufacturing societies) was held, under the patronage of the French Government, in the palais des congrès of the Exposition of 1900 during the three days beginning July 13. It was also the first reunion of the French association, although their consulting chamber, which took the initiative of the congress, has been in existence since 1884. Out of 200 French associations nearly all gave their support to the congress. From other countries representatives of Government departments of labor, cooperative federations, and cooperative production and manufacturing societies were present. The palais des congrés, in which the greater part of the hundred and more official congresses of the Exposition were held, was constructed by ten of these associations in Paris, which were proud to have been awarded the contract in competition with individual contractors.

The congress received as members both the delegates of workingmen's associations of production and individual members duly accredited. Ladies were admitted as active members. The language of the congress was French, but English and German were used. The subscription fee, as for the other cooperative congresses, was 5 francs.

In the series of five cooperative congresses which followed one after the other in order to allow the members to take part in all, the congress of production associations was placed second. Until this Exposition, there have been no international relations between the French and American societies.

The work of the congress was divided into five sections, and the papers and discussions followed along these lines:

1. The philosophy of cooperation; its roots, ideals, moral tendencies; human solidarity, association of workingmen without reference to religion or politics.
2. Cooperation from the industrial point of view (the main work of the congress).
3. Relations of production associations with supply societies, trades unions, etc. International relations.

REPORT ON THE CONGRESS FOR THE PATRONAGE OF YOUNG WORKING WOMEN, CHEAP HOUSING, AND WOMAN'S WORK.

By JANE ADDAMS, *Director of Hull House.*

The three congresses were, first, concerning the "Patronage of young working women," held from June 10 to 13; second, "Cheap dwellings" or better housing, held from June 18 to 21, and, third, "The woman's congress," or the congress concerning women's work and institutions, held from June 18 to 23.

Your delegate found that the first, "Patronage of young working women," consisted almost exclusively of reports and discussion of methods employed in the church societies founded in France about thirty years ago, and designated "Les patronage." These reports were usually read by the priest in whose parish the society existed or by Catholic ladies who had interested themselves in the religious and social training of working girls. A very interesting example of the latter is found at 14 Boulevard Inkerman, called Oratoire St. Philippe, which was founded under the patronage of the Baroness du Mont, and owes much of its success to her untiring energy. Children and young girls are taught the common-school branches, and also needlework and simple industries, while an effort is made to provide recreation and to carefully supervise all their "out of school" or "out of work" hours. The entire relationship is on a religious and patronal basis, and is more disciplinary than that usually sustained toward the members of "a working girls' club," as the term is used in England or America.

The interest of the congress centered in the Sunday afternoon session, which was a large and enthusiastic gathering. The reports, however, were almost exclusively from French societies, and the congress could scarcely be called international in character. Your delegate found the most valuable suggestions along the line of trade instruction and apprenticeship for young girls.

The second congress, on better housing, occurring as it did during the same days as the woman's congress, and also during a week when the jury of class 108 met almost daily, was but scantily attended by your delegate, which she very much regrets, as the congress was a most valuable and suggestive one. The able and energetic president, M. Jules Siegfried, was particularly successful in utilizing the resources of the Exposition to illustrate the papers read before the congress and to illuminate and exemplify the discussions. These resources were not only the exhibits made by many nations in the social economy building of the attempts made to erect model houses and to control sanitary building by legislative measures, but also included an imposing number of houses erected at Vincennes, which were actual repro-

ductions in size and material and in their furnishings of housings experiments considered by experts to have been most successful. These latter illustrate only individual houses for workingmen. The collective houses or tenements, as they are commonly called, were discussed at a session held at the Musée Social, which has amassed a vast amount of valuable material upon this type of house, in which the French have been perhaps the most successful.

The first two days of the congress were largely given to the legal and financial aspects of the housing problem, the results obtained in different countries by semiphilanthropic associations who had erected workingmen's dwellings or had remodeled old ones. In some instances these associations claim to have completely changed the character of a given neighborhood. Under the legal aspects many schemes were presented which were designed to enable the workingman to purchase his own house or at least to purchase shares in the stock company owning it. The last two days dealt with such questions as gardens for working-class districts, such gardens to be both public and individual, and with the modifications brought about in the housing situation by the increased facilities for rapid transit.

The discussions were animated. The question in which your delegate was much interested was a general one—as to how far it is desirable to induce a workingman to put his savings into the purchase of a house when the exigencies of his trade will probably demand an instant removal from one manufacturing center to another and his chance for securing work may depend upon his mobility. Belgium seems to have succeeded most effectually in overcoming this difficulty connected with modern industrial conditions. Her national savings-bank system invests the savings of workingmen in houses so that a given investor buying a house in one city “upon the installment plan” may, if he removes to another city within the kingdom, transfer the amount of his investment in his house to a house of a similar type and value in the other city. This gives him the consciousness, during his residence in both towns, of living in his own house and gives him the practical use of his savings without at the same time tying him to one spot and restricting the “mobility” of his labor. Doubtless this plan would be difficult without the backing of government, but Belgium is to be congratulated in this pioneer attempt to solve one of the difficulties of ownership by the modern workingmen, and the experiment may prove suggestive to the American building and loan associations.

The third congress, that pertaining to women's work and institutions, has doubtless already been fully reported, as America was fortunate in being represented by a number of delegates to the various branches of the congress. Among these delegates may be mentioned several who not only read valuable papers, but made material contributions to the general discussions and spirit of the congress.

The programme of the congress was extensive and somewhat complicated, embracing philanthropy, social economy, legislation, moral education, both social and individual, pedagogy, labor, arts, letters, and sciences, the latter divided into five sections, each one of which was presided over by a woman competent in the especial subject. Great catholicity of taste and interest was also apparent in the personnel of the officers, who included women distinguished in prison reform and philanthropy and education; women who had become well known as historians, novelists, and critics. The programme included addresses by men of repute and scholarship in the departments of education and social economy, and in the afternoon sessions men invariably took part in the general discussions. A frank recognition was given to the fact that in all questions of public policy and social amelioration the interests of men and women are mutual and no attempt was made to set up artificial standards and divisions concerning "women's work." In response to the greetings given by Mlle. Monod, president of the French congress of women, and by Mme. Bogelot, president of honor, responses were made by representative women from Russia, Greece, Turkey, Sweden, Norway, Switzerland, Austria, Germany, and Denmark, as well as the United States, the response for the latter country being made by Mrs. Tyng, a representative of the woman's clubs of Georgia, who made a delightful address in a French of great purity and charm.

Each morning the five divisions of the congress each held division meetings in smaller council rooms, where papers were read and followed by an absolutely free, but often technical, discussion, the section meetings naturally attracting the experts in each department. The subjects of the section meetings were distinguished for their practicality. The openings for women in agriculture, in science, in coeducation, and their legal rights and difficulties were some of the topics most intelligently considered. The afternoon meetings gathered the sections into one body. The reports from each of the morning sessions were heard. These were discussed in their relation to the development of the movement as a whole, and every effort was made toward the adoption of such a final report as might tend not only toward arousing enthusiasm for a given measure, but also to give it accuracy of formulation and feasibility of accomplishment. The congress in its collective aspect was indeed a constant example of fine enthusiasm curbed to the highest efficiency and expediency, and, although the discussions were often animated to the point of being tumultuous, the final resolutions were always moderate and accurate.

Two American women represented the Society of American Women in London. Another American woman represented, with much ability, the conditions and needs of the Armenian women. These in addition to the women standing for the varied and important interests in their

own country, such as the woman's club movement, household economics, the press, education, literature, social science, architecture, philanthropy, medicine, and law. The American women of the congress unanimously adopted resolutions, which were read to the congress, and from which the following apt sentences may be quoted:

It is with the most profound sympathy that they see the movement toward the power of cooperative organization among women, a power happily already secured by American women. But by reason of this greater liberty, enjoyed in a land of composite people, it is their privilege to extend the hand of comradeship, firm and faithful, to all who seek liberty, equality, and fraternity.

INTERNATIONAL CONGRESS IN RELATION TO ACCIDENTS TO LABOR AND SOCIAL INSURANCE.

By WILLIAM F. WILLOUGHBY, *Delegate*.

There is certainly no single movement having for its purpose the improvement of the condition of the poorer classes that has attracted greater attention in Europe during the past two decades than that having for its purpose the insurance of the working classes against accidents, sickness, and old age and invalidity. These contingencies represent the three cases in which a workman finds himself unable to earn wages consequent upon physical disability. Practical experience had demonstrated that the great majority of working men and women either could not, or at least did not, make any adequate provision for these cases, and that consequently an enormous amount of suffering resulted, and the poor-law authorities were burdened with the care of thousands of persons reduced to want as the result of the physical disabilities from which they, or the persons upon whom they were dependent for support, suffered.

The problem was, could any way be devised by which these contingencies, one or the other of which was bound to occur to almost every workingman, could be provided against? The answer has been found in the device of insurance. Germany led the way with her elaborate system, begun in 1883, for the compulsory insurance of practically every employee in the Empire against accident, sickness, invalidity, and old age, partly at the expense of the employee himself, partly at the expense of his employer, and partly at the expense of the State. Austria soon followed the example of her neighbor by the enactment of laws for the compulsory insurance of workingmen against accident and sickness. Italy, France, Great Britain, Norway, Denmark, Finland, and Spain have also passed laws making the compensation of all trade accidents compulsory. France, Italy, and Belgium have State institutions for the insurance of workingmen against old age and invalidity. All the European countries have well-developed systems of mutual aid societies for the insurance of workingmen against sick-

ness, and Great Britain has her wonderful system of friendly societies, while the United States does something through her fraternal orders, her railway relief departments, her trade-union benefits, and other mutual aid societies.

It was to study the vast movement taking so many different forms in the different countries that the international congress in relation to accident to labor and social insurance was organized at Paris in 1900. Adequately to understand the interest attaching to this meeting, which was the most important of all the social science congresses, it is necessary to make mention of the international gatherings which had preceded it.

The first international congress in relation to this question met at Paris in 1889 under the title of international congress in relation to accidents to labor. It immediately became evident, however, the question of insuring against accident was the most important phase of the question, and that in turn was closely related to the other branches of workingmen's insurance. In the permanent organization that was effected at this meeting it was accordingly decided to enlarge the scope of the congress, and the words "social insurance" were added. The second congress met at Berne, Switzerland, in 1891, the third at Milan in 1894, at which the writer had the pleasure of being a delegate from the United States, the fourth at Brussels in 1897, and the Paris congress of 1900 consequently constituted the fifth of the series.

Mention has been made that a permanent organization was effected in Paris in 1889. This took the form of the nomination of a permanent committee with headquarters at Paris. This body has proven an exceedingly efficient body. In addition to organizing the congresses of which mention has been made, it has published a quarterly bulletin of about 100 pages each, since January, 1890. These bulletins, which now number eleven volumes, and the volumes of reports of the international congresses thus constitute a considerable library, and undoubtedly present the most valuable body of literature relating to the question of workingmen's insurance that exists in any language.

From these preliminary remarks it can be seen that the Paris congress was far from a special meeting organized in connection with the Paris Exposition. There were scores of members in attendance who had been to every congress since the organization of the first meeting in 1889, and almost all of the persons taking a leading part in the proceedings were well acquainted with each other and familiar with their works.

The congress met from June 25 to June 30, and was attended by from 500 to 600 delegates. M. Oscar Linder, who had been the president of all the preceding congresses, was again given the same honor.

It is impracticable to attempt any detailed account of the discussions that took place. A large part of the time was consumed by the

reporters reading their reports in abstract or in extenso. The following translation of the titles of the reports presented give a very fair idea of the ground covered and the valuable nature of the material thus brought together.

German conditions were shown by the reports of:

1. Dr. T. Boediker (formerly president of the imperial insurance department), "The insurance of workingmen in Germany at the end of the nineteenth century."
2. Edmond Sochmann (vice-president of the Union of German Institutions for Accident Insurance), "The prevention of accidents, its purpose and its realization by the German accident insurance institutions."
3. Alwin Bielefeldt (privy counsellor at the imperial insurance department), "The medical treatment of workingmen insured against accidents and invalidity in Germany."
4. Lucien Rogues, "The attenuation of the results of accidents in Germany."
5. M. Hartmann and M. Villaret, "Protective goggles for workingmen: Their various kinds, their nature, their employment."
6. M. Hartmann, "The tariff of trade risks in force in Germany for the insurance of workingmen against accidents."

Austrian conditions and institutions were shown by the reports of:

7. Charles Koegler (director of the Accident Insurance Institution for Lower Austria), "The organization of workingmen's insurance in Austria."
8. Charles Koegler, "The influence of institutions for the insurance of workingmen against accident and invalidity upon the medical treatment."

For France reports were presented by:

9. Georges Paulet (chief of the division of insurance and provident institutions in the ministry of commerce), "The French law regarding insurance against accidents and the conditions for putting it into execution."
10. Edward Vermovt (general secretary of the syndicate of accident insurance companies with fixed premium), "The new law and insurance by fixed premium."
11. Albert Gigat (director of the mutual insurance funds organized by the manufacturers of iron and steel, textiles and sugar), "Voluntary insurance against accident by mutual insurance institutions."
12. M. Marestaing (director of the mutual insurance society "La Preservatrice"), "The insurance of workingmen against accidents and its realization under the régime of employer's liability and the common law."

Italy was represented by a number of important reports:

13. Vincent Magaldi (director of the division of credit and provident institutions, ministry of commerce), "Italian legislation concerning accidents to labor and its application."
14. Anonymous: "The national bank for the insurance of workingmen against invalidity and old age."
15. Ernest de Angeli, "Private initiative at Milan in the prevention, the attenuation, and the reparation of accidents to labor."
16. Pompee Colajanni, "The law concerning accidents to labor as applied in Sicily to sulphur miners."
17. "Report of the Italian railway companies on accidents to labor on Italian railways."

For Holland reports were presented by:

18. Dr. Ruysch, "Medicine and the prevention of accidents to labor."

19. Ch. M. A. Bijleveld, "The question of accidents to labor in Holland."

20. Ch. M. A. Bijleveld, "Actual condition of the bill for obligatory insurance against accident to labor in Holland."

For Belgium reports were presented by:

21. Louis Woden (chief of bureau in the ministry of labor and industry), "The prevention and reparation of accidents to labor in Belgium."

22. Charles Dejace, "The question of old age and invalidity pensions in Belgium."

For Switzerland a report by:

23. Jules Repond, "Rejection of the law of October 5, 1899, concerning compulsory insurance against sickness and accidents in Switzerland."

For Finland the report by:

24. Professor Hjeldt, "Workingmen's insurance in Finland."

For Luxembourg the report by:

25. H. Newman, "Legislation concerning the compulsory insurance of workingmen against sickness and accident in the Grand Duchy of Luxembourg."

Conditions in the United States as regards accident to labor were shown by the two reports:

26. W. F. Willoughby, "Accidents to labor as regulated by law in the United States."

27. S. D. Fessenden, "The present status of employers' liability in the United States."

There were finally several papers relating to general aspects of the problem of workingmen's insurance. They were:

28. Doctor Zacher, "Workingmen's insurance in Europe studied according to its results."

29. Maurice Bellom, "The mutual relations between the different branches of workingmen's insurance."

30. S. Fontaine, "Explanation of a new financial system for insurance operations."

These papers served the purpose not only of giving a clear statement of the condition of affairs in each country as regards accidents to labor and workingmen's insurance, but furnished a basis for the comparison of the merits of the different systems that have been adopted and which constitute the real purpose of the congress.

As regards all the nations, it was shown that the attempt to secure the indemnification of workingmen for accident received in the course of their work through the operation of the old employer's liability laws, had proven an utter failure. This was chiefly due to the fact that under modern conditions of industrial work it is impossible to determine in the majority of cases the person at fault. At least responsibility can not be accurately apportioned. The principle of "trade risk," or *risque professionnel*, as it is usually called, that each industry presents certain dangers that may be said to be inherent in it and for which no person can be specifically blamed, gradually gained universal acceptance. These accidents which are due to the industry,



VIEW ALONG EAST AISLE, LOOKING SOUTH, VARIED INDUSTRIES SECTION, GROUPS XII
AND XV, ESPLANADE DES INVALIDES

it was held, should be compensated by the industry in the same way that accident to plants are borne. Finally the expenses of litigation and the intolerable delays and inconveniences of this method of securing compensation by an action at law became unbearable. All of the important European nations and Great Britain have, therefore, entirely swept away this system, and in its place adopted what is known as compulsory compensation. Under this system it is now compulsory upon employers to compensate all their employees injured during their work according to a fixed scale as determined by the law. The only exceptions made are when the accidents were purposely caused by the employee or he was grossly negligent, and even the latter qualification is not found in the German, Austrian, and some other laws.

Thus far, as to the compulsory compensation of injured workmen at the charge of the employers, all the countries are in accord. It is in the manner in which the compensation shall be secured that the systems of the various nations differ. Germany, Austria, and some other nations have provided that this compensation must be paid through insurance institutions created by the State, to which it is compulsory upon the employers to belong.

A second system is that of Italy, where insurance is compulsory, but the employers have a wide choice of the kind of institution in which they must insure. They can make use of a state insurance bank, or private accident insurance companies, or join forces and organize cooperative or mutual insurance funds. Finally, large enterprises like railway companies can organize special insurance departments somewhat similar to the railway relief departments maintained by a number of roads in the United States.

The third type of systems is that adopted by Great Britain, France, and Spain, where compensation by the employers is obligatory; but they are left free to insure against this risk or not, as they see fit. Special provision, however, is made in the law by which they can organize mutual insurance or other kinds of funds, and it is the expectation that the most of the employers will find it safer and less burdensome to provide for the charges thrown upon them by the compulsory compensation acts in this way.

These are the three main types of policies pursued, but there are a great many differences in detail, some of them of great importance, in the system belonging to the same type. All of these differences and the relative merits and defects of each system were as fully discussed by the persons actually intrusted with their administration as time would permit. The most important discussions centered around the question whether insurance should be compulsory or not. Other points discussed were the desirability of having insurance institutions organized by trades or by districts; whether compensation should be paid in lump sums or in pensions; whether the financial system should

be that of capitalization or yearly assessment; how coefficient of risks should be determined; what measures should be taken to prevent accidents; what should be done in the way of attenuating the consequences of accidents and thus lessening the charges to be borne by the employers or the insurance institutions, etc.

These and many other questions were thus being carefully discussed and the arguments for and against presented so as to furnish a guide in case of future action. To the United States this discussion was of especial value, as no action in this direction has yet been taken, and when it does become necessary to act, as it certainly will be in the near future, material will be at hand enabling us to avoid many of the mistakes which could only be learned by experience.

The subject of insurance against sickness and old age and invalidity received less attention, though they are of almost equal importance. Germany is the only country having a comprehensive system of compulsory insurance against old age and invalidity. In both France and Belgium, however, the insurance of coal miners against both old age and invalidity and sickness is compulsory. Both of these countries, as well as Italy, have also created state banks for insurance against old age and invalidity, in which workingmen are encouraged to insure themselves, though liberal subsidies on the part of the Government are granted by employers to such of their employees as will avail themselves of this opportunity. The question, however, is yet a new one and is yet pressing for solution. Great Britain, especially, is at the present time seeking to devise some practicable form of old-age insurance.

The history of sick insurance through mutual aid societies in Europe is a long one, and present efforts are directed rather toward making existing institutions more efficient than to creating new systems. But comparatively little time, however, as has been said, was given to the discussion of this form of insurance.

In conclusion it should be said that the meeting was in every sense a successful one, and the congress again demonstrated that it was one of the most important international organizations for the study of social problems that is in existence. The next congress, the sixth of the series, will meet at Dusseldorf, Germany, in 1902.

THE INTERNATIONAL CONGRESS FOR THE LEGAL PROTECTION OF LABOR.

By WILLIAM F. WILLOUGHBY, *Delegate.*

The desirability of an international agreement regarding the enactment of legislation for the protection of the working classes is a subject which has occupied the attention of economists and legislators for a long time. Labor legislation is peculiarly a branch of practical

economies that can be studied with advantage from the international or comparative standpoint. Here, as in almost no other field, the experience and practice of one nation is consciously and deliberately followed by others. It is a matter of necessity, therefore, that each nation should keep informed of action in other countries, and that, as far as possible, the results of different lines of policy be compared.

The subject, moreover, is one of direct practical importance, owing to the existence of international competition. Nations often are unwilling to enact measures desirable in themselves, because it is feared that national industry may be placed at a disadvantage with respect to that of countries not having the same restrictions. Thus it might possibly be desirable to limit hours of labor in a particular trade, but for one nation alone to do so would evidently be to handicap it in competition with others permitting longer hours.

The point of departure for the serious attempt to study this question of labor legislation from the international standpoint was the famous conference in relation to this question summoned by the German Emperor at Berlin in 1890. This gathering was strictly an official body, fourteen Governments being represented by specially appointed delegates. After long discussions this conference formulated in a statement the principles of labor legislation, upon the adoption of which practically all the delegates were agreed. And the delegates separated after agreeing to recommend in their Governments the adoption of these principles.

In the decade following this conference most, if not all, of the states of Europe have entered upon a course of protective labor legislation along the lines laid down at the Berlin conference, though it can not be said that the programme there adopted was consciously followed. In fact, in most cases the laws have been more radical than the proposals there agreed upon. A full account of this legislative activity is given in the series of articles by the present writer appearing in the bulletin of the United States Department of Labor, 1899-1901.

In 1897 a second international congress in relation to labor legislation assembled on the invitation of the Belgian Government, at Brussels, at which the writer had the pleasure of representing the United States as delegate from the Department of Labor. This congress took as its programme a consideration of the extent to which the Berlin resolutions had been adopted by the several Governments, and an exceedingly valuable series of reports was presented concerning the history and condition of labor legislation in the respective countries.

The third international congress in relation to this question is the one which met at Paris, July 25 to 28, 1900, the proceedings of which constitute the subject of this report. At the congress at Brussels considerable time had been given to the discussion of the principle itself of labor legislation; that is, whether under any circumstances

such action was either desirable or justifiable. A number of delegates, prominent among whom were MM. Gres Guyot and Raffalovich, like Herbert Spencer, saw in such action by the state but an unjustifiable intervention in affairs that should be left to the free play of individual forces. As the standpoints of the two schools are so irreconcilable, resting as they do upon essentially different theories of the function of the state, and as all nations have now adopted the principle of labor legislation, it was deemed best at the Paris congress to bar discussions concerning this point, in order that the time might be fully devoted to the consideration of practical questions relating to the protection of labor by law.

The congress was attended by something over 300 delegates, Austria, Belgium, Hungary, Mexico, Russia, Holland, and the United States being represented by official delegates. The representatives of the latter country were the present writer and Prof. John Cummings, of Harvard University.

In order to prevent the discussions from assuming a too general character, the regulations required that the reports should relate to one or the other of the following questions:

I. The legal limitation of hours of labor: A comparative study of legislation in different countries. The legal limitation of the hours of labor of children, young persons, women, and adult men. Progress and reforms desirable. Is it feasible to exact a legal minimum workday of the same duration in all industrial countries?

II. The prohibition of night work: The consequences of night work. The prohibition of night work by the laws of different countries. Is it feasible to prohibit night work for all categories of labor—men, women, young persons, and children? Should such a prohibition make exceptions in the case of certain industries? Is an international agreement necessary in order to obtain the prohibition of night work?

III. The inspection of labor: The different systems of inspection of labor existing in the different countries. Advantages and disadvantages of these systems. Results obtained. The collaboration of workingmen delegates in the inspection of labor. The designation of such assistant inspectors by the workingmen, and their control by the labor unions.

IV. An international union for the legal protection of laborers: The utility of such an international association in advancing the progress of labor legislation. What should be the object of such an institution?

The congress was opened by a brilliant address by the distinguished economist M. Cauwes, who treated of the general subject of labor legislation and its necessity under modern industrial conditions. The meeting was presided over by the minister of commerce, M. Millerand, who likewise spoke briefly on the same point. The general business of the congress was then entered upon by a consideration of the first question, that relating to the legal limitation of hours of labor. Thirteen reports were presented in relation to this subject. Dr. Hitze, a deputy in the German Reichstag, presented a summary of German legislation upon the subject and the results of its application. M. Albert Métin gave a very interesting description of legislation in

Australia and New Zealand regarding all three of the questions, the limitation of hours of labor, night work, and inspection of labor. For Austria, Mme. Helene Gumflowicz presented two reports, the one giving the history of legislation limiting hours of labor in that country, and the other relating especially to hours of labor in mines. Belgian legislation and conditions were shown by the report of M. A. Verhaegen; Danish legislation, by the report of M. H. Vedel; Spanish legislation by the report of M. R. Rodriguez, and French legislation by the detailed report of M. Raoul Jay, professor of law at the University of Paris. M. Emmanuel Rivi re presented a report on the subject of the unification of the hours of labor in different industries. He showed that, owing to the different conditions prevailing in the different industries, anything like the same hours of labor in all was neither desirable nor feasible. M. R. Worms also made a report on the subject of the legal protection of agricultural workers. Hungarian legislation was shown by the report of M. Joseph Szterenyi; Dutch legislation by the report of M. S. M. den Tex, and Swiss legislation by that of M. Schuler.

According to understanding the conclusions of the congress were not embodied in formal resolutions, as was done in several other congresses. M. von Berlipsh, who presided at the session when the subject was under discussion, in his r sum  of the discussion, stated that almost all the members seemed to be in favor of the legal regulation of the hours of labor of adult men as well as of children and women. As was afterwards remarked, he might also have declared that the members were in favor of the limitation of the hours of labor through private agreement between employers and trade unions. There seemed to be very few who thought that an international agreement regarding action in this matter could be secured. Certainly not in the immediate future.

The second subject, night work, was productive of fewer reports. M. Hirsch, a member of the Reichstag, reported upon German conditions; M. Kuzmany, upon Austrian conditions; M. Paul Pic, upon French legislation, and M. Wegmann, upon Swiss legislation. The sentiment of the congress was unanimous that night work should be restricted as far as possible by legislation, or by any other means available. Especially should the employment of women and children at that time be prevented.

The third question, that of inspection of factories, may be said to constitute the key to the whole subject of labor legislation. It has been the universal experience that labor legislation is of little utility unless some system of good government supervision is at the same time provided. There were a considerable number of reports presented showing the extent to which factory and mine inspection services had been organized in the different States. M. Fuchs, the inspector of factories for Baden, reported on factory inspection in Germany;

M. Sories Varlez, on inspection in Belgium; M. A. Fontaine, the commissioner of labor, on inspection in France; M. Sonis Guyor, on inspection in Canada.

There was no difference of opinion regarding the desirability of organizing as efficient services as possible. The most important point brought out was that the employees are in many cases apt to look upon the inspectors rather as representatives of the employers than of themselves. Hence has arisen the demand in a number of countries that so-called workingmen's delegates should be appointed as assistant inspectors. This demand has been complied with by a number of governments, and the sentiment of the congress seemed to be in favor of having the interests of the employees represented in this direct way.

Undoubtedly the most important action of the congress related to the fourth question—the creation of an international association for the legal protection of workers. Efforts had been made at previous congresses, but had not resulted in definite action. Greater success was achieved at Paris, and a permanent organization was effected. The possible importance of this body in all future efforts looking toward international action in reference to labor legislation justifies one translation of its constitution and its conclusion in our report. In no other way will it be possible to obtain as accurate an idea of its character and scope of action.

INTERNATIONAL ASSOCIATION FOR THE LEGAL PROTECTION OF WORKERS.

CONSTITUTION.

ARTICLE. I. There is formed an international association for the legal protection of workers (*association internationale pour la protection des travailleurs*). Its headquarters will be at Switzerland.

ART. II. This association has for its object—

(1) To serve as a connecting body between those who, in the different industrial countries, consider legislation for the protection of workers as necessary.

(2) To organize an international bureau of labor which shall have as its mission to publish, in French, German, and English, a periodical collection of the labor laws of all the countries or to lend its assistance to such a publication. This collection should include (*a*) the text or a résumé of all the laws, regulations, or decrees in force relative to the protection of workingmen in general, and especially concerning the labor of children and women, the limitation of the hours of labor of adult males, rest on Sundays, or rest days at regular intervals, and dangerous industries; (*b*) an historical sketch of these laws and regulations; (*c*) a résumé of the reports and official documents concerning the interpretation and execution of the laws and regulations.

(3) To facilitate the study of labor legislation in the different countries, and in particular to furnish to members of the association information concerning legislation in force and their application in the different states.

(4) To advance, by the preparation of memoirs or otherwise, the study of the question of bringing into harmony the various legislations for the protection of labor, as well as that of international statistics of labor.

(5) To summon the international congress in relation to labor.

ART. III. The association shall be composed of all the persons and societies (other than the national sections) which adhere to the object of the association as they are indicated in Articles I and II, and which pay to the treasurer annual dues of 10 francs.

ART. IV. Any member who at the end of the year shall have neglected or refused to pay his dues shall be considered to have resigned.

ART. V. Members are entitled to receive all the publications of the association. They also have the right to the gratuitous services of the bureau of information which may be created, and, in conformity with a special regulation, the services coming within the competence of that bureau.

ART. VI. The association will be directed by a committee composed of members belonging to the various States admitted to have such representation.

ART. VII. Each State shall be represented on the committee by 6 members up to 50 of its citizens adhering to the association. Beyond that number each new group of 50 members will entitle the State to another member, but in no case can this number exceed 10. The Government will be invited to designate each a member, who shall have the same rights on the committee as other members.

ART. VIII. The duration of the terms of members of the committee is not limited, and this committee can be re-created by cooptation. The election of new members of the committee to replace members resigning or dying will be made on the nomination of members belonging, respectively, to the States having a right to representatives. The vote will be by secret ballot in a meeting of the committee, the convocation of which shall mention the candidates presented. The members not assisting at this meeting can forward their votes under seal to the president.

ART. IX. The committee is competent to take such action as may be necessary for the accomplishment of the purposes of the association. It will meet in general assembly at least once every two years. It can be convoked by the bureau whenever it is judged necessary by the latter, or when 15 members of the committee petition for it. The choice of the place of meeting will be determined upon after all the members of the committee have been consulted in writing by the general secretary within the delays fixed by the bureau.

ART. X. The committee will elect from among its members a bureau composed of a president, a vice-president, and a general secretary. The committee will also appoint a treasurer of the association.

ART. XI. The bureau has for its mission the taking of the necessary measures for insuring the execution of the resolutions of the committee. It will manage the funds of the association. It will make a report each year to the committee concerning its management of affairs. It will appoint the employees and other persons necessary for the service of the association. It will place itself in relations in all the industrial States with specialists and competent persons disposed to furnish information concerning labor laws and their application. These persons can receive the title of correspondent of the association.

ART. XII. The secretary-general has charge of the correspondence of the association of the committee and of the bureau, as well as of the publications and the service of information.

ART. XIII. The treasurer will receive the dues and take care of the funds. He must make payments only on the indorsement of the president.

ART. XIV. A national section of the association can be formed in each country on condition that it embraces at least 50 persons and pays to the bank of the association a minimum annual contribution of 1,000 francs. The constitutions of these sections must be approved by the committee. This section shall have the right to fill vacancies among the representatives of its country from among its members. The members of a national section shall have the same rights as those of the association, with the exception that the publications to be furnished it by the association, as well as its representation on the committee, shall be proportionate to its annual contribution.

ART. XV. The present constitution can only be amended in whole or in part in a general assembly of the committee by a two-thirds vote of the members present, and when the proposed modification has been inserted in the notice of the meeting.

THE INTERNATIONAL CONGRESS IN RELATION TO WORKING-MEN'S HOUSES.

By WILLIAM F. WILLOUGHBY, *Delegate.*

The international congress in relation to cheap houses, or, as it is properly styled in English, the international congress in relation to workingmen's houses, met in the palace of social economy June 18 to 21, 1900. It was attended by delegates from every important country of Europe and from the United States, the latter country being represented by an official delegate from the Department of Labor, Mr. W. F. Willoughby, the author of the present report; by Dr. W. H. Tolman, secretary of the League of Social Service, of New York City, and Mr. Hutchinson and Mrs. Cyrus McCormick, of Chicago, who are interested in the new movement for the housing of the working classes in that city.

The meeting was one of the most interesting of the various social economy congresses meeting during the course of the Exposition period. This was due both to the intrinsic importance of the problem with which it had to do and the fact that this problem represented, or permitting of definite concrete action rather than a discussion of general principles and methods, which is so rarely productive of results of value in a gathering like this. The congress had the further advantage that it was not an assembly meeting for the first time. It represented rather the legitimate successor to the former international congresses, which had been held at Paris in 1889 and at Brussels in 1897, and of the national congresses in relation to workingmen's houses, which had been held at Antwerp in 1894 and at Bordeaux in 1895.

The importance of this point can not be overstated. The members, though coming from different countries, were not strangers to each other. They had already, in great part, met at these previous congresses. Definite lines of action had been inaugurated, and the Paris congress of 1900 found the plan already prepared. In point of fact, there was no time lost in preliminary discussions, and the meetings were throughout business-like and efficient.

The presidency of the congress fell to M. Jules Siegfried, formerly minister of commerce, who had held the same position at the congress of 1889. M. Siegfried, as is well known, is also the president of the Music Social and the French Society for Workingmen's Homes, as well as being president of the group jury of the Exposition having to do with exhibits in social economy. As vice-presidents were elected M. Georges Picot, the permanent secretary of the Academy of Moral and Political Science, and M. Emile Cheysson, inspector-general of roads and bridges of France.

In order that the proceedings might relate to definite subjects a series of questions had been formulated, and persons selected to report

on each question. These reports in turn were grouped under three heads, corresponding to the natural diversion of the problem. Following is a list of these questions and the persons reporting on each.

I. Houses containing several tenements:

1. What average revenue should be sought in the construction of houses containing more than a single tenement? M. Georges Picot, reporter.

2. What measures should be taken to insure proper care, cleanliness, and order on the part of tenants? What sort of lease should be recommended? What prohibition should be stipulated? M. P. S. Weber, reporter.

3. Should the buildings be restricted to certain categories of tenants? In particular, is it desirable to have special buildings for single men and women? M. P. Langer, reporter.

4. What measures should be taken to facilitate the conversion of existing structures into hygienic and cheap apartment buildings? Dr. Baudran, reporter.

II. Detached houses and gardens for workingmen:

1. What are the best means for facilitating the acquisition by artisans and workingmen of small houses and gardens? What are the circumstances preventing them from becoming owners? What are the best combinations to be employed in renting such property to workingmen with families? M. H. Séinery, reporter.

2. What modifications should be introduced into existing laws regarding the inheritance of property in order to permit the homestead being transmitted into act? Should the principle of exemption from attachment be adopted? MM. A. Mellet and Paul Bureau, reporters.

3. Workingmen's gardens. Baron de Retours, reporter.

III. The intervention of the public authorities in the matter of providing better houses for the working classes. M. Rostand, reporter.

In addition to this formal programme of reports intended for discussion, other communications were either presented in printed form or read, giving an account of efforts being made in different countries for the improvement of the housing conditions of the masses. Among these was a report of the present writer, descriptive of the most important work now being done in this direction in New York, Boston, and Washington. The most important action of the congress, however, was that having for its result the definite organization of a permanent international committee in relation to workingmen's houses, which should serve as a permanent link between the different congresses and give to the international study of this question a continuity that it had not had up to that time. This body will be referred to more at length later on.

The most significant feature of the programme of questions to be discussed is that they related to definite questions needing an answer. No time was to be lost in discussing the importance of improved housing. That was conceded. The general features of the problem had been thoroughly considered at the previous congresses, and the present order of the day was framed so as to relate strictly to unsettled matters.

Among the special problems of the general housing question one of the most important is, Under what circumstances should resort be had to houses containing a number of tenements and what returns should

be sought from money employed in such undertakings? To lay a basis for an answer to these questions M. Picot, in his paper, first called attention to what had been accomplished in different cities in the way of erecting model tenements, and what had been the results of their exploitation. The work at London, Paris, and Lyons was taken as the best examples of this class of activity. In the first city he showed the enormous sums that had been devoted to this purpose by the Peabody and Guinness trusts and other bodies, amounting to over 100,000,000 francs. At Paris the Philanthropic Society had erected seven houses, containing each from 35 to 55 tenements, or a total of 297 apartments, in which were living 982 persons. The Paris Society for Cheap Houses, following the same plan, had built six houses with 139 tenements and accommodating 501 persons. At Lyons the Society for Cheap Houses, created in 1886, was just completing its one hundred and sixteenth house and was furnishing tenements to 1,385 families, including over 7,000 persons.

In spite of these gratifying figures it was evident that but a beginning had been made in the way of providing improved homes for the people. It was evident, therefore, that it was hopeless to look to purely philanthropic action as a means to cope with the conditions presented. The conclusion was inevitable, therefore, that such a return should be sought on money invested in this class of buildings that private capital would be induced to enter the field from commercial as well as public-spirited motives. Philanthropy was not to be discouraged, but it should take the form of the erection of buildings and the rental at the usual rates, otherwise returns would be so low that private capital would be unable to compete, and more harm would be done in preventing such investments than would be accomplished by the money philanthropically invested. The system pursued by the Peabody Trust, in London, and the Heive Trust, in Paris, whereby a steady profit is sought, which is added to the capital and thus permits an indefinite extension of the work, was the best form for direct philanthropy to take. The reporter, M. Picot, formulated his conclusions in the following resolution, which was adopted by the congress:

In the construction of houses of several stories the attempt should be made to improve the tenement from the standpoint of the moral and material conditions of life, notably in the arrangement of the rooms and in their ventilation and sanitation. The effort should at the same time be made to lower the rent to an extent not incompatible with earning the current rate of interest received by capital employed in building operations of this character, in order to attract to the enterprise capital corresponding to the needs.

A second resolution bearing on this important question was proposed by M. Cheysson and adopted by the congress. It was in the following terms:

After capital is properly rewarded it is desirable that any surplus remaining should be used first to constitute a reserve fund, in order to provide for possible future mis-



1-4. COLLECTIVE EXHIBIT OF FURNITURE AND DECORATIONS, VARIED INDUSTRIES SECTION,
ESPLANADE DES INVALIDES.

fortune, and then a special fund, to be devoted to measures in the interest of the tenants, either collectively or individually. Upon the liquidation or dissolution of the society this fund should be devoted to the same purposes, having in view the interest of the tenants.

Finally a resolution was adopted having reference to the best form of pure philanthropy in respect to housing operations. It reads:

The best system of liberalities to be recommended for the progressive development of cheap houses is the gift of capital to philanthropic societies which shall take charge of the erection of the houses and their renting, and which shall capitalize the net profits and devote them to further building operations, thus extending the work indefinitely in the way of erecting houses which are models as regard these hygienic arrangements, conditions of comfort, and moderate rents.

That these resolutions are directly in line with the best opinions of experts upon the subject can not be doubted.

The second question, relating to the terms of contract to be insisted upon in renting tenements, is not of so great general interest. The important points agreed upon were that the tenants should be allowed as much liberty as possible, but that subletting should be prohibited.

Concerning the question whether houses should be erected for special categories of workingmen, the important point was as to the desirability of having houses intended solely for single men or for single women. That such houses should be built was generally accepted. Reference was especially made to the success of the "Rowton houses," erected by Lord Rowton, and the similar houses erected under municipal auspices in various British cities. The same success had not been achieved in the erection of houses for single women, and their desirability was especially urged.

A resolution was adopted in regard to the fourth question declaring that it was in general not advisable to attempt to convert old houses into modern, model tenements. Their construction was so defective from the standpoint of housing that only in exceptional cases could the transformation be effected without too great expense.

The desirability of giving to each workingman, or at least to each one with a family, an independent house, and if possible a small garden attached, was recognized as an aim that should be striven for wherever possible. This object can be obtained in a variety of ways. The first is that where a capitalist or company erects houses and allows the tenants to acquire them by gradual payments in lieu of rent. This is the system pursued by the famous Mulhouse Society, founded by Jean Dollfus in 1853. Since 1854 this society has built 1,243 houses, at a cost of 4,351,128 francs. The shareholders have received their regular 4 per cent per annum, and all the houses have been sold and paid for. The society has now ceased building, as the want has been completely satisfied in the district to which its operations were confined. The society considers that its work is accomplished. It has a surplus, which will be devoted to some philanthropic purpose. Other

French societies practicing this system are those of Auteuil, of Amiens, Havre, Rouen, etc.

A second form of action is that of the cooperative building society, which is so well known in the United States and Great Britain. The French are making great efforts to develop the same system in their country, and a certain measure of success is being achieved. The method itself received the unqualified approval of the congress. The securing of adequate capital is a much more difficult matter in France and Belgium than in this country. The assistance of the savings bank in both countries has been sought and secured. M. Lepreux, the director of Belgian General Savings Bank, which has done so much in this direction, introduced the following resolution, which was adopted:

The best means of facilitating the acquisition of small properties by the working classes consists in the organization of cooperative or joint-stock societies, either as the result of individual initiative or action on the part of the savings banks, and having for their purpose the making of loans repayable in installments. In view of insuring the repayment of the sum loaned the life of the person making the loan should be insured.

This combination of life insurance with the system of purchasing a house on partial payments is one of the most valuable devices that has been adopted within recent years. It is the system followed by the City and Suburban Homes Company of New York in the disposal of their detached houses at Homewood.

The question relating to changes that it is desirable to introduce into existing laws regarding the inheritance of property is one of interest, particularly to the French, and its solution is one, therefore, which does not particularly concern us.

The final question on the programme was that relating to the part that the government should play in the modern movement for improved housing. M. Rostand's report goes into this important question in a very thorough way. In this report and in the discussions which followed were shown the great efforts that had been made by the governments of different nations and cities for the improvement of housing conditions, such, for example, as that done by the county council of London in the appropriation of slum areas and the building of improved houses; the direct building operations of the other British cities; the very effective way in which the States Savings Bank of Belgium had existed through judicious loans in building operations; the work of the same character being done by the Caisse des depots et consignations as the savings banks in virtue of recent legislation, etc. Regarding what should be the exact limits of state intervention in this matter the members of the congress were much divided. The outcome of the discussion was, therefore, the adoption of the rather indefinite resolution that—

Considering that the intervention of the state in the construction of cheap houses can vary in each state according to the constitution, the public customs, and the

gravity of the evils to be remedied, the congress is of the opinion that the question is not one susceptible of a general solution, and refers it to future national congresses in the different countries represented.

Mention has been made of the effecting of a permanent international organization of those interested in the movement for improved housing. France had possessed, since 1889, in her *Société Française des Habitations à Bon Marché*, an organization which was almost international in the character of its work, and which in the 11 volumes of its publications had accumulated most valuable material relating to the question in all lands. It was felt, however, that a true international organization should be accomplished. The last act of the congress was, therefore, the adoption of the constitution of the permanent international committee. This body is to consist of representatives of national bodies having for their purpose the promotion of improved housing, and where such bodies are not in existence other persons competent to represent this country in the matter. The duties of the committee are to act as a board to take charge of the organization of all future congresses, to act as a central bureau of information, and generally to serve as the link connecting persons and bodies in different countries interested in this question.

The next meeting of the congress will be held at Dusseldorf, Germany.

CONGRESS OF NUMISMATICS.

By GEORGE F. KUNZ, *Delegate*.

During the Paris Exposition of 1900, among many similar gatherings of men of science there was held the international congress of numismatics, which met, from the 14th to the 17th of June, at the *palais des congrès*. This was the second session of this body, the first having been held in 1891 at Brussels. The conference was called by a circular issued in 1899 by the commission of organization, of which the president and secretary, le Comte de Castellane and M. Adrien Blanchet, respectively, held the same offices in the *Société Française de Numismatique*; and other officers were prominent students of the subject in France or connected with the mint. This commission formulated the rules and arrangements for the congress and drew up a list of topics for consideration, on many of which important papers were prepared by numismatists from various parts of Europe.

These topics numbered 33, and were classified under 5 heads, as follows: (1) Ancient numismatics; (2) mediæval and modern numismatics; (3) contemporary numismatics and monetary problems; (4) medals and tokens (?); (5) miscellaneous (chiefly as to bibliography). A large number of interesting papers were read and discussed, of which only a very few can be referred to here. St. Ettore Gabrici, of the Naples Museum, sent a memoir entitled "The rôle of numismatics in the scientific movement of the present day," in which he regards the science

of numismatics as less to archæology than to political economy, and believes that thus considered, as an adjunct to history, it will yield more valuable results hereafter than it has heretofore. Numerous articles were presented on Gaulish, Celtiberian, Etruscan, and other ancient European coins, among which was one of curious interest on Celtic money in Hungary—a “treasure-trove” at Nagy Bisztevecz; the author, M. Edmond Gohl, of the Hungarian National Museum, made a strong argument to prove that these pieces were coined by the Celtic Cotini, neighbors of the ancient Boii. An interesting paper by M. Edmond Drouin, secretary of the Asiatic Society, dealt with the influence of Sassaman money upon the coinage of India. From the third to the twentieth century A. D., it would appear that the monetary type of the Sassanian dynasty of Persia had great popularity and was imitated, even long after the overthrow of the dynasty, by many people and races in Southern Asia. Several valuable articles on classical coinage were also presented, bearing on historical subjects; among these one by M. Robert Mowat, of the Antiquarian Society of France, was extensively discussed. It dealt with the “restitution” or recoinage of ancient pieces by several of the Roman Emperors in order to complete public collections that had been injured or destroyed.

Coming down to mediæval and modern times various interesting papers were presented. Among these were two in relation to papal coins struck at Avignon; one by M. P. Hauberg, curator of the Royal Cabinet of Medals at Copenhagen, on “Byzantine influence on Danish coins of the eleventh century;” one by Sig. Guisepppe Castellane, on “Money struck at Ancona by the French during their occupation of that city in 1799.”

Under the third group of topics a very valuable suggestion was made by M. L. de Largue, consul-general of France at Rotterdam, in which he urged a return of ancient ideas in regard to coins, by making them bear devices recording important events of their time. It is evident that this somewhat metallic character imparted to coins would greatly enhance their future historical value. An interesting discussion followed, upon a paper by the secretary, M. Adrien Blanchet, on “Ancient laws relating to the discovery of treasure as compared with modern rules and usages.” The surviving influence of old customs as still felt and the relative rights of the discoverer and the state were dealt with.

M. Paul Stroehlin, delegate from the Numismatic Society of Switzerland, in considering the methods of cataloguing medals and coins, proposed the establishment of an international institute of numismatic bibliography, to be charged with the organization of uniform methods of recording all numismatic and kindred publications in different countries, by authors and by subjects. He also presented the request that the next meeting of the congress be held at Geneva in 1904, the

quarter centennial of the establishment of the Numismatic Society of Switzerland. This suggestion was received with general approval.

The closing address was then given by M. Ernest Babelon, curator of the department of medals and antiques in the Bibliothèque Nationale of France. The address was a review of the history of early collectors of medals, and their works, prominent among whom was Petrarch. M. Babelon showed how much these early numismatists had done for the science by placing their collections at the service of students and savants, and thus laying the foundation, from the seventeenth century, of numismatic literature. The labors of such men as Andreas Fulvius, Wolfgang Lazins, Hubert Golts, and Fulvio Orsini, have now indeed little value save for curiosity; but, notwithstanding, we owe to these pioneers a boundless debt of gratitude.

CONGRESS OF ALPINISM.

By ANNIE S. PECK, *Delegate*.

The international congress of alpinism was held at Paris in August, 1900. This was the fifth congress assembled of such a nature, the first being held at Gressoney in 1877, the second at Geneva in 1879, the third at Salzburg in 1882, and the fourth at Turin in 1885.

As many years had elapsed since the last international gathering of Alpinists, a widespread interest and cordial participation in the congress might have been expected. The fact, however, that it was held in a city remote from the Alps, at a time of the year when mountain climbers are wont to indulge in their pastime, doubtless prevented the attendance of many who at some other season would have greatly enjoyed such a gathering. Nevertheless, the membership of the congress reached the goodly number of three hundred.

The international congress of alpinism owed its initiative to the French Alpine Club, under the auspices of which it was practically held. In January, 1899, the central board of this club voted that an international congress uniting the various alpine associations should be held in Paris in 1900 at the time of the Exposition. The date subsequently chosen, August 12 to 14, was elected to coincide with the annual meeting of the French Alpine Club and the jubilee fêtes in honor of its twenty-fifth anniversary. A committee of organization representing the majority of the many alpine societies of France (sections of the French Alpine Club) prepared a general programme of the subjects to be considered, and issued invitations requesting the alpine societies of other countries, and, where no such societies existed, the governments, to send delegates to the congress, and also inviting to membership individuals interested in such matters.

The membership therefore consisted of two classes: First, the delegates from foreign governments or alpine societies, and, second,

individuals invited to participate either because of their reputation as scientists or their interest in mountain climbing and the subjects relating thereto. The only practical difference between these two classes was that those of the second class paid 10 francs each for the privilege of membership with stated fees for the banquets and excursions, while to the official delegates these taxes were remitted.

The programme of the congress included general meetings, section meetings, and excursions, as well as receptions and banquets, the last evidently being the most popular occasions, as the attendance was larger than at the more formal sessions for business.

On the evening of August 11 occurred the first informal assemblage of the congress, a reception given by the central committee of the French Alpine Club at their rooms on the rue du Bac. Here M. E. Caron, president of the committee of organization and of the club, welcomed the visitors with cordiality, the large suit of rooms which forms the headquarters of the club affording ample accommodations for the guests and for the dainty refreshments which attested the charming hospitality of our hosts.

The official opening of the congress took place August 12, at 2.30 p. m., in the palais des congrès on the grounds of the Exposition. After the formal address of welcome by M. Caron, who mentioned individually all of the official delegates of clubs and foreign countries, the following officers were elected:

Honorary presidents.—Pillwax, delegate of the Austrian Government, and of the Austrian Alpine Club.

L. Oblat, delegate of the Austrian Government, and of the Austrian section of the German-Austrian Alpine Club.

Jules Hentschel, delegate of the Austrian Government, and of the Mountain Society of Lower Austria.

Hastings, delegate of the Austrian Tourist Club.

The Baron Alexandre de Freedericksz, delegate of the Russian Government.

Dr. Bosshard, delegate of the Swiss Federal Council.

Garrett P. Serviss, delegate of the Government of the United States.

A. Lawrence Rotch, delegate of the Government of the United States.

Miss Annie S. Peck, delegate of the Government of the United States.

President.—Ernest Caron, president of the French Alpine Club.

Vice-presidents.—C. E. Matthews, delegate of the Alpine Club.

Oberhummer, delegate of the German-Austrian Alpine Club.

Serge Slovaïsky, delegate of the Alpine Club of the Crimea.

General secretary.—Henry Cuenot, delegate of the section of the Haut-Jura to the central committee of the French Alpine Club.

Secretaries.—Armand Viré, secretary of the Society of Speleology.

De Jarnac, honorary general secretary of the French Alpine Club.

Paul Matter, member of the Paris section of the French Alpine Club.

Julian Bregeault, delegate of the section of Lyons to the central committee of the French Alpine Club.

W. A. Willis, secretary of the French Alpine Club.

Dr. J. Vodoz, secretary of the central committee of the Swiss Alpine Club.

H. La Fontaine, delegate of the Belgian Alpine Club.

V. Sampere y Labros, member of the Excursionist Center of Catahinya.

After the general meeting sessions of the three sections of the congress were held and the following officers were elected:

First section.—President: Prince Roland Bonaparte, member of the central committee of the French Alpine Club.

Vice-presidents: Angelo Mosso, honorary member of the French Alpine Club.

A. Lawrence Rotch, honorary member of the French Alpine Club.

Bert, delegate of the minister of agriculture.

Schrader, vice-president of the French Alpine Club.

Secretaries: Armand Viré, secretary of the Society of Speleology.

Armand Janet, member of the Paris section of the French Alpine Club.

Gustave Mangin, member of the Paris section of the French Alpine Club.

Second section.—President: Mr. Edouard Sauvage, delegate of the Mont Blanc section of the central committee of the French Alpine Club.

Vice-presidents: C. E. Matthews, delegate of the Alpine Club.

Dr. Bosshard, delegate of the Swiss Federal Council.

Councilor Hautz, delegate of the Berlin section of the German-Austrian Alpine Club.

Ballif, president and delegate of the Touring Club of France.

De Cessole, president of the section of the Maritime Alps of the French Alpine Club.

Secretaries.—Paul Matter, member of the Paris section of the French Alpine Club.

Ch. Schmidt, delegate of the Old Mountain Union.

Miss Mary Paillon, member of the section of Lyons of the French Alpine Club.

Third section.—President: Ernest Diehl, delegate of the section of Carthage to the central committee of the French Alpine Club.

Vice-presidents: Leluis Mariano Vidal, president of the Excursionist Center of Catalunya.

Oberhammer, delegate of the German-Austrian Alpine Club.

Serge Ilovaisky, delegate of the Alpine Club of the Crimea.

Francisque Gabet, president of the section of Lyons of the French Alpine Club.

Henri Ferrand, vice-president of the Society of Tourists of Dauphiny.

Secretaries.—Laugier, delegate of the section of the Maritime Alps to the central committee of the French Alpine Club.

Julien Bregeault, delegate of the section of Lyons to the central committee of the French Alpine Club.

Courvoisier Gallet, president of the section of La Chaux de Fonds of the Swiss Alpine Club.

On the conclusion of these meetings the members of the congress were conducted, in several parts, to a pavilion on the Exposition grounds containing the exhibit of the French Alpine Club, the only society of savants that erected its own building at the Exposition, a Swiss chalet, the exterior of which was decorated with paintings. On the ground floor were exhibits of the various sections of the club and of individual members, comprising books, photographs, maps, reliefs, objects of ethnography and natural history, scientific instruments and articles of equipment. The stuffed animals, the manikins in gay-colored clothing, the skins of beast, the shoes, ice axes, etc., formed a collection obviously of great interest to the general public, as evidenced by the crowd continually in the building. Especially noteworthy was a model of the observatory of M. Vallot on Mont Blanc, a more elaborate structure than that of M. Jansen, built on snow foun-

dations at the summit, this being constructed on the rocks of the Bosses not far below, 4,365 feet above the sea. The model of this well-equipped meteorological observatory, having no roof, shows the interior of the eight rooms and their furnishings, apparently a very comfortable place for the scientific observer and a haven of refuge for the storm-ridden, perishing mountaineer.

The Pyrenees, the Swiss Alps, the Caucasus, the region of Aconagna, and a fraction of the Himalayas are represented in photograph and painting; the Matterhorn, in relief also, while the chain of Mount St. Elias appears in a panorama sent by the Duke of Abruzzi.

On the floor above most of the paintings are exhibited, especially a grand panorama of Mont Blanc, most happily conceived and executed by the noted geographer, M. Schrader, who now, in place of the ordinary Swiss guide, explains to the congress the scene. One unfamiliar with mountains must here gain some idea of their grandeur, though the display is best appreciated by those who know and love them.

At half past seven the members of the congress assembled for a dinner on the first floor of the Eiffel Tower, having ascended comfortably in an elevator. As a very "cute" little souvenir of the occasion, a postal card laid on each plate represented the delegates, with ice axes and very thin legs, laboriously climbing a steep slope to the "Refuge Eiffel 5,800 cm.," the summit of Mont Blanc in the distance.

The only United States delegate present at the congress, who was also the only woman delegate, was honored with a seat, the second on the right of President Caron, the first, apparently for political considerations, being occupied by the Russian delegate, Baron de Fréédéricksz, and the third by Mr. Charles Edward Matthews, expresident of the English Alpine Club, whose Alpine record would seem to have entitled him to first place, as it did to the first after-dinner speech.

After dinner the president, in happy vein, again extended a graceful welcome, to which response was made by Mr. Matthews, Dr. Eugen Oberhummer, vice-president of the German Austrian Society, and others, Swiss, Russian, etc.; also there was a speech by a representative of the French Government, since this congress, like all the others, had an official character. To perceive the benefits of mountain climbing from a physical point of view one had merely to look about him, not simply at those in the prime of life, but at others more advanced in years. M. Caron, I was amazed to learn, was above 60, though in looks and manner at least fifteen years younger; Mr. Matthews, of equal age, who within the last forty-five years, has failed but three times to make an annual pilgrimage to the Alps, still unwearied in this pastime, though he has ascended Mont Blanc twelve times, and every prominent mountain in Switzerland once, if not several times. A delightful evening was surely the verdict of all.

The literary exercises of the congress occurred August 13 and 14.

At the morning and afternoon sessions the delegates assembled in three sections.

In the first section, which was devoted to alpinism from the scientific point of view, papers were presented in reference to the study of glaciers, the orology of the Asturias, mountain sickness, the naming of mountains, the restoration and preservation of mountain lands, glacial torrents and land slides, the observatory of Mont Blanc, Alpine flora, mountain railways, and the exploration of the dunes of Gascogne.

In the second section, where alpinism from the practical point of view was considered, the subjects of the papers were: The courses of guides, the equipment of the alpinist, the insurance of guides, popular mountain sport at Geneva, the refuges of Tarantaise and Vanoise, a plan to form a society for the help of the sick and injured among the mountains, the alpine cross, and international congresses.

In the third section, where alpinism was regarded from the picturesque and artistic point of view, there were papers upon the protection of glaciers from the picturesque point of view, the names of mountains, alpinism in Algeria, ascents of Popocatepetl and Orizaba in Mexico, the preservation of the natural beauties of mountains, three pioneer ascents in Baltistan, the depopulation and repopulation of mountains, the mountains of Dalmatia, the mountains of Le Teste, manners, descriptions, and costumes.

At the evening sessions, all sections united for illustrated papers. On August 13 a learned treatise on the relation of landscape to geology, by Armand Janet, and an interesting account of some new ascents in Norway, by Mad. Aubrey le Blond, better known to the English-speaking public as Mrs. Burnaby or Mrs. Main, were read. The following evening, in addition to the papers on the programme, the grottoes and abysses of Dauphiny, by M. E. A. Martel, and a trip to the Pyrenees, by M. Maurice Meys, views were exhibited by Mrs. Fanny Bullock Workman and Miss Annie S. Peck, illustrating the papers which they had read in the afternoon in reference to their ascents, respectively, in Baltistan and Mexico. Besides those mentioned, one other lady only presented a paper, Mlle. Mary Paillon, of the French Alpine Club. All the papers were given in French, which was the native tongue of the great majority of the speakers.

On the afternoon of August 14 the congress was honored with a reception at the Hotel de Ville by the president of the city council, of which M. Caron is a prominent member.

On the morning of August 15 occurred the closing session of the congresses, when the reports of the various sections were presented and the following resolutions were adopted:

First section—Glaciers.—The international congress of alpinism resolves to undertake the organization in every country of a service for the observation of glaciers, in order to prevent the repetition of catastrophes and to give information in regard to the movement and formation of glaciers.

Alpine flora.—The international congress of alpinism assures the association for the protection of mountain plants of its interest, and would be glad to see alpine societies render it support by every means in their power.

Second section.—The international congress of alpinism resolves that a new manual should be published, to circulate among guides and tourists ideas relating to equipment, food, hygiene, and the difficulties and dangers of mountaineering.

The international congress of alpinism, considering the question of nourishment during mountain climbs, is unanimous in condemning the use of alcohol, and especially of absinthites, which can have only a deleterious influence instead of repairing the strength of the exhausted traveler.

The international congress of alpinism resolves that the question of insurance of guides against accidents occurring on the course should continue to receive the attention of the various alpine societies, though appreciating what has already been done by some of these.

The international congress of alpinism receives the official communications in regard to the number and importance of the societies for mountain sport, notably at Geneva. It believes that the object of these societies is interesting and useful, provided that they never lose sight of the necessity of preventing every act of imprudence on the part of their members.

The international congress of alpinism considers that it would be desirable to call the attention of societies for giving aid to the injured to the special question of mountain accidents, as has already been done at certain places.

The international congress of alpinism resolves that the complete bibliography of alpinism begun by the Belgian Alpine Club should be continued under the care of that society, to which the publications of the various alpine associations should be sent for this purpose.

The international congress of alpinism resolves that international reunions of all alpine associations should take place periodically; they should embrace sessions for conference and excursions. An international commission, provisionally composed of the existing board of officers of the international congress of alpinism, shall be entrusted with the determination of the frequency of these congresses, the fixing of the place of meeting, and the preparation of the programme of subjects to be considered.

The international congress of alpinism resolves to insert in the order of the day of the next international congress the following question: Is it desirable to adopt a universal key for the refuges (huts) which it is necessary to close?

The international congress of alpinism desires to see all alpine societies adopt the signals of distress in mountaineering spoken of in the report of Dr. Bosshardt and already adopted by the German-Austrian Alpine Club.

The formal exercises of the congress being over, the members were invited to participate in the jubilee fêtes of the French Alpine Club. A steamboat excursion the same afternoon to St. Germain en Laye was enjoyed by a large number. After a stroll in the forest a banquet was served on the terrace of the pavilion of Henri IV followed by the usual toasts and speeches.

Excursions of two days' duration, either to Normandy or to Fontainebleau, were also at the option of the members of the congress.

THE RAMIE-MACHINE TRIALS AT THE PARIS EXPOSITION OF 1900.

By CHARLES RICHARDS DODGE, *Member of Jury.*

During the first week in October, about a month before the close of the Paris Exposition, a ramie congress was held, during which there was an interesting and important trial of ramie-defibrating machines, the trial extending over several days. The test trials for all machines, which were confined to the same day, were made on small lots of from 5 to 15 kilos of stalks (a kilo representing two and two-tenths pounds) with their leaves adhering.

The trials were witnessed by a jury appointed by the French Exposition authorities, your reporter being the American member of the jury. Five machines were entered for trial, as follows:

Machine known as "La Gauloise," manufactured by the Anglo-French Ramie Company, 45 Billiter Square Building, London, and 22 Place Vendome, Paris; A. Estienne, inventor.

The Machine Faure, P. Faure, Limoges, France.

"Fa Francaise," Felicien Michotte, 21 Rue Condorcet, Paris; and

The Lacote-Marcou machine, Lacote et Marcou Freres, Paris. Two machines of different principle.

The official records of the trials are as follows:

Estienne machine ("La Gauloise").—Fifteen kilos green ramie stalks, four to eight days from the field; butts and tops cut off; four men at machine. Time, 2.50 minutes. Kilos wet fiber, 4.200. An inch or more of the butt end of stalks not cleaned, and considerable wood and trash mixed with the fiber. Little or no waste. Fiber not in best condition. In estimating the weight of fiber after drying, it may be stated that wet ribbons should yield one-third their weight in dry ribbons.

Second trial, same machine.—Ten kilos butted stalks, but fresh cut. Time, 2.05 minutes. Four men. Wet fiber, 2.300 kilos. Same behavior as on first trial; end not cleaned.

Faure machine.—Fifteen kilos green ramie stalks not butted, 2 meters long (150 stalks by count). Time, 6.20 minutes. Four men (2 skilled laborers). Kilos wet fiber, 1.215. Waste fiber, 1.900.

Two machines standing side by side were used in this trial. Three stalks were fed in the first machine at one time and cleaned to the length of a foot or 18 inches, then slowly withdrawn, reversed, and passed to the skilled laborer at the next machine. After the ribbon from the three stalks had been partly withdrawn by hand, the end was caught by an endless belt (round in section) working in a grooved guide wheel, and withdrawn automatically, falling upon the floor beneath. This necessitated gathering up the ribbons, one by one, by

hand, in order to have them parallel in the bundle. The clean fiber is unquestionably of high grade, and when dry resembles china grass, though much darker in color. The high percentage of wastage is a serious drawback to the effectiveness of the machine.

The machine embodies the raspador principle, the shoe being of metal.

Second trial, same machine.—Ten kilos freshly cut stalks (155 by count), 1.50 meters long. Time, 4.35 minutes. Wet fiber, 0.510 kilos. Waste fiber, 1.300 kilos.

In this trial four stalks were fed at one time. Same number of men as at first trial.

Lacote & Marcoe frères' machine.—Fifteen kilos green stalks. Time, 20.20 minutes. Weight of fiber, wet, 2.160 kilos. Waste fiber, 0.800 kilo.

Three men attended this machine and two stalks were fed at a time, cleaned part way, then reversed, and after cleaning withdrawn and laid over a rail, one man being employed in taking and laying the fiber. The machine was the simplest shown in the contest. It is practically a cylinder about a foot long and 8 inches in diameter, on the circumference of which is arranged ten rigid beater blades, playing in a curved brass shoe beneath, the space between regulated by set screws. Only two beater blades can be in position above the concave surface of the shoe at one time. The fiber was fairly well cleaned, though some wood and waste were mixed with the filasse. Six stalks, half cleaned, were pulled out of the operator's hand and were shot through. Recleaning these six stalks lost one minute of time; otherwise the time would have been nineteen minutes twenty seconds. The slowness of the machine is a serious defect.

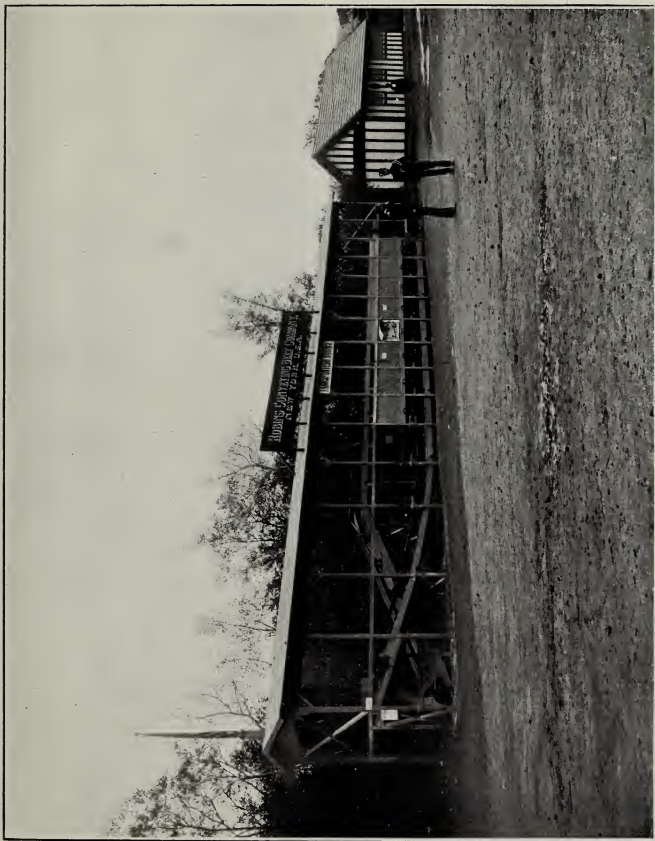
In the second trial of this machine 5 kilos selected stalks, butted, were used. Time, 4.45 minutes. Fiber, kilo 0.505. Waste fiber, kilo 0.395.

Same number of men as in first trial and similar behavior of machine, though time was saved by the men moving somewhat more quickly than in the first trial.

Third trial, Lacote & Marcoe frères' machine.—This was a trial on dried stalks with a different form of machine, too complicated for a description here without a drawing. Practically two corrugated rolls of bronze, two plain steel cylinders of small dimension, and a combination of beater rods to whip out the waste and trash.

NOTE.—An attempt was made to run this machine on green stalks, 15 kilos having been weighed out. After four or five starts, however, the trial was abandoned, as the machine would not work.

Similar attempts were made with the Michotte machine on both wet and dry stalks, but the results at the start were so unsatisfactory that the trials were abandoned.



VIEW OF ROBINS CONVEYING BELT COMPANY'S EXHIBIT, BOIS DE VINCENNES, GROUPS IV AND V, DEPARTMENT OF MACHINERY AND ELECTRICITY.

In this trial 5 kilos dry stalks were used. Official running time, 7.30 minutes. Weight, dry fiber, 1.620 kilos. One stoppage for adjustment during the run.

The results of the trials fail to show that we are any nearer the solution of the great problem of commercially economical decortication than we were several years ago. Some interesting deductions might be made, however, and progress on certain lines should be recorded.

The statement, many times put forth in my reports,¹ that a machine produces fiber in quantity at the expense of quality, and vice versa, was proved to be as true to-day as when first made. The Faure machine turns out a product resembling the china grass of commerce; but at the same time it produces a quantity of waste fiber which, as the trials developed, amounted to 60 per cent in round numbers, against 40 per cent of good fiber out of the total quantity of fiber produced. The total quantity of wet fiber amounted to 7 pounds from 33 pounds of stalks. Carrying out the calculation roughly, based on the product of a farm of 100 acres, producing two crops a year, a farmer having but one machine with which to harvest his crop would be obliged to work the machine over four years of three hundred working days each, and occupy it during ten hours of each day. One of the slowest machines shown at this trial would have taken over thirteen years to do the same thing.

In a short unofficial trial, merely to show the jury the behavior of the machines, the Estienne machine worked 30 stalks in a minute, the Faure 20 stalks, and the Michotte 80 stalks. The fiber produced by the Faure machine was very fine, by the Estienne fiber of lower grade, while the machine that ran through 80 stalks produced practically worthless fiber because it was tangled, broken, and full of trash—quantity at the expense of quality.

An interesting point brought out by a study of the machines was the fact that in the construction of all but the Michotte the raspador principle has been followed almost in its simplest form, while the knife principle, which has been used in so many of the earlier machines, was conspicuous by its absence. The most successful machines were also those with fewest parts, which proves the truth of what has so often been stated, that the practically successful ramie defibrating machine must be simple, light, and cheap, for the work of harvesting the ramie crop of any plantation must be done not by one or two machines, but by a system of machines, and, indeed, Mr. Faure contemplates such an idea in his scheme of setting up and equipping ramie decorticating factories.

As a summary, so far as the ramie industry of the United States is concerned, where skilled labor, and even common labor, is high, more

¹Reports of the Office of Fiber Investigations of the United States Department of Agriculture.

rapid progress in the improvement of ramie machines must be made than has been shown in the past ten years or the goal will never be reached. The results of the present trial give the American ramie grower little hope, though possibly in China, India, and other countries, where labor is very cheap, the best of the present machines might accomplish something.

THE INTERNATIONAL CONGRESS OF AËRONAUTICS.

By A. LAWRENCE ROTCH,

Delegate of the United States Government.

This was the second aëronautical congress, the first having been held during the Paris Exposition of 1889. In these eleven years the science of aëronautics has made great progress and has become more intimately connected with the science of meteorology. Accordingly, arrangements were made for holding the present reunion immediately after the meteorological congress, in order that the meteorologists might the more easily attend both. Consequently, the congress convened September 15, and continued until the 21st. The general meetings were at the observatory of Meudon, a few miles southwest of Paris, while the sections met at the palace of the Institute of France in the interior of Paris.

Although about 180 persons were enrolled, most of whom paid an assessment of 10 francs, only a small number attended the meetings, the difficulty of reaching Meudon, no doubt, being one reason. Of five delegates from the United States, Professor Langley and the writer, with M. Poëy, who was commissioned to represent Cuba, were present. The other countries that appointed delegates were Belgium, Ecuador, Great Britain, Italy, and Mexico; but in view of the scientific and practical importance of this congress, it is surprising that more Governments were not represented. M. Janssen, the director of the Meudon Observatory, who was president of the organizing committee, was chosen president of the congress, the other officers of this committee also continuing in office, as follows: President, M. Janssen; vice-presidents, M. Marey and Colonel Renard; general secretary, M. Triboulet; recording secretary, Captain Voyer; foreign vice-presidents, General Rykatcheff (Russia), Professor Herge-sell (Germany), Professor Langley (United States); foreign secretaries, MM. Alexander (England), Emden (Germany), Schiavone and Pesce (Italy).

In his opening address M. Janssen summarized the progress that had been accomplished in aëronautics since the congress of 1889, over which he had also presided, making particular mention of the aid that meteorologists had received from the use of balloons and kites carry-

ing self-recording instruments. M. Janssen predicted that the nation which first learned to navigate the air would rule the world, for, while the sea, which has given supremacy to the nations using it most, separates continents, the atmosphere not only unites but dominates them. Four lectures were delivered at Meudon, two of them by the brothers Renard, the officers in charge of the central establishment for military *aéronautics* at Chalais, Meudon. Maj. Paul Renard described the present status of *aéronautics*, as exemplified at the Exposition, and Col. Charles Renard discussed the various attempts to direct balloons. Colonel Renard is particularly qualified to speak on this subject since, with Major Krebs as collaborator he constructed, in 1884, for the French Government, the dirigible balloon *La France*, the most successful of all the attempts to direct and propel a balloon. The meteorological application of balloons and kites were described by MM. Teisserenc de Bort, Assmann, and Rotch, the two former speaking of the meteorological results obtained in France and Germany, respectively, by the use of balloons and kites, and the latter describing the employment of kites for the same purpose at his own observatory on Blue Hill, Massachusetts.

The meetings in Paris were subdivided into four sections, viz: *Aëros-tation*, or construction and management of balloons, Major Renard, president; aviation, including *aéroplanes* and their propulsion, Colonel Renard, president; scientific applications to astronomy, meteorology, and physiology, M. Bouquet de la Grye, president; legislative questions concerning the rights and duties of *aéronauts*, Major Hirschauer, president. The greater part of the communications were made to the two first sections. The titles will be found in the French monthly journal, *L'Aéronaute*, and it is intended to publish later a volume containing the most important memoirs. At the closing meeting a permanent international committee was chosen to carry out the resolutions adopted by the congress. It was composed of the general officers of the congress already named and of these members, representing the following countries: Major Hinterstoisser, Austria; Major Millard, Belgium; Major Trollope, Great Britain; Professor Assmann and Major Moedebeck, Germany; M. Canovetti, Italy; Professor Joukowski and M. Drzwiecki, Russia; Colonel Strohl, Switzerland; M. Rotch, United States. Ten French members were also named. This committee has already held several meetings in Paris, and subcommittees have been requested to report on the questions proposed.

The congress terminated with a banquet, which was appropriately held in the orangerie of the Château of Meudon, where the first military balloons were constructed during the First Republic, a hundred years before, under the direction of Coutelle and Comte. To the discourse of M. Janssen the writer had the honor of replying in behalf of the foreign delegates, reminding the assemblage that a year after

the invention of the balloon in France an American and a Frenchman made in England the first balloon ascent for scientific purposes and the following year crossed the English Channel to France in a balloon.

The real value of the congress lay in its function as an aid to the demonstration of the practical status of aërostation in France at the end of the nineteenth century. A visit was made to the aëronautical section of the Exposition, where there was a very complete historical collection of objects relating to the development of ballooning as well as modern apparatus. Noteworthy was the Avion, or flying machine of M. Ader, perfected under the auspices of the French Government between the years 1892 and 1897 at a cost of 500,000 francs. Although the official trials were unsatisfactory, yet the ingenious construction of the supporting surfaces, resembling the wings of a huge bat, and the lightness of the steam engine, driving twin screws placed in front, rendered it an object worthy of study. A trial of the dirigible balloon of M. Santos-Dumont, on the Aéro-Club grounds near St. Cloud, was witnessed by members of the congress, and, although an accident to the rudder prevented the demonstration from being conclusive, it was seen that the motive power was sufficient to propel the balloon against a light wind. The apparatus consists essentially of an elongated envelope filled with hydrogen, below which M. Santos-Dumont sits and controls a double gasoline engine that turns a propeller placed in front of him, the rudder being at the extreme rear of the gas envelope. It is expected that this balloon will compete for the Deutsch prize of 100,000 francs to be awarded to any balloon making the journey from Coteaux-St. Cloud to the Eiffel Tower and back, a distance of 7 miles, in half an hour. It may be remarked that the balloon *La France*, on five occasions fifteen years ago, went from Chalais-Meudon toward Paris and returned to its starting point at a maximum speed of 14 miles an hour, so that the task set to-day does not seem impossible to accomplish.

Through the courtesy of the minister of war the central establishment for military aeronautics at Chalais-Meudon was for the first time opened to the public, and members of the congress were thus enabled to see the experimental laboratory and the apparatus that Colonel Renard used to determine the resistance of the air to bodies of different shapes moving through it, as well as the construction and management of French military balloons, both captive and free. A demonstration of the latter was afforded by the ascent of a free balloon, conducted by Captain Hirschauer, in which the writer was asked to participate. A visit was made to M. Teisserenc de Bort's observatory for the study of dynamic meteorology at Trappes, 15 miles southwest of Paris. Two balloons-sondes, having envelopes of silk and paper, respectively, and holding about 2,000 cubic feet of hydrogen gas, were liberated, and an exhibition was given of meteorological kiteflying. With these paper

balloons self-recording instruments are lifted twice a week to heights of 7 or 8 miles, and with kites a height exceeding 16,000 feet has been reached.

A series of competitive sports was held during the Exposition at the annex in the Bois de Vincennes, and these included aeronautical contests under the direction of Major Renard. The kite competitions, of which the writer was a judge, were unimportant, since, excepting the multicellular kite of M. Lecornu, the kites shown were either toys or else were devoid of originality and badly built. The balloon competitions, however, carried out with the cooperation of the Aero Club, a Paris organization that is employing the balloon as a means of sport, were highly successful, although, unfortunately, no foreign balloons competed. Between June 19 and October 9 158 ascensions were made from the aerostatic park of the Exposition, without the slightest accident. The filling of these balloons required 7,000,000 cubic feet of gas, and on one day alone 26 balloons, holding 800,000 cubic feet of gas, ascended. The competitions were of various kinds, but related chiefly to the greatest distance traversed, the longest time in the air, or the greatest altitude attained. In order that small balloons might take part, races were organized in which the aim was to land as near as possible to some point, chosen beforehand by each aeronaut, within 25 miles of Paris, and the skill shown in utilizing the prevailing winds at different altitudes and in making use of the guide ropes is shown by the fact that in a competition between 17 balloons the winner landed within half a mile of the goal that he had designated. In the final long-distance race two of the six competing balloons landed in Russia, the winner having traveled 1,200 miles in thirty-five hours forty-five minutes, which is probably the longest voyage ever made in a balloon. In the contest for altitude the greatest height which is known to have been reached in France was exceeded, and 27,500 feet was attained. These examples show the high degree of safety, efficiency, and popularity that ballooning has reached in France, so that whenever the dirigible balloon is realized there will be no obstacle to its use for practical purposes; and, indeed, it was confidently predicted that before the next aeronautical congress the air would have become practically navigable.

THE INTERNATIONAL CONGRESS OF METEOROLOGY.

By A. LAWRENCE ROTCH,

Delegate of the United States Government.

Meteorological congresses and conferences have been held in Europe and in the United States at various times since 1872, with the object of bringing together the meteorologists from the different countries and affording them an opportunity to exchange ideas and to agree on

methods of work. A permanent international committee, composed of representative meteorologists, acts as an advisory and executive body and holds occasional meetings to discuss questions of international importance, while subcommittees have been appointed to consider special subjects. At the present time the United States is represented on the permanent committee by Prof. Willis L. Moore, Chief of the United States Weather Bureau, and on two of the subcommittees by the writer.

The congresses, or conferences, which usually are arranged by the permanent committee, are of two kinds, viz, those open to anyone, and those composed of invited heads of weather services and observatories. These delegates, however, never have had authority to pledge their governments to any course of action. The congress held during the Paris Exposition of 1889, as well as the present congress, were of an unofficial character, although the countries participating in the Expositions were invited, through their Commissioners-General, to send delegates. Last year, as Professor Moore, Chief of the United States Weather Bureau and a delegate of our Government, was unexpectedly prevented from going to Paris, he deputed Mr. Walz, in charge of the exhibit of the Weather Bureau, to represent him; and this gentleman, his assistant, Mr. Johnson, and the writer were the only Americans who attended the congress. M. Poëy, formerly director of Belen College Observatory at Habana, was authorized by the United States Commissioner-General to represent Cuba, and Fr. Algué, director of the Manila Observatory, had the same authority to represent the Philippine Islands.

This congress was more international in character than any of its predecessors, because all of the principal countries were represented, and more than 100 persons of 30 nationalities attended the meetings, most of them paying a fee of 20 francs. The following countries appointed official delegates, some of whom, however, did not appear: Belgium, Bosnia-Herzegovina, Bulgaria, France and French Indo-China, Guatemala, Hungary, Italy, Japan, Mexico, Norway, Monaco, Portugal, Roumania, Russia, Servia, Spain, Switzerland, United States, including Cuba and Philippine Islands.

The congress met between the 10th and 15th of September, in the rooms of the Société d'Encouragement, rue de Rennes, where the ordinary meetings of the congress of 1889 were held. M. Mascart, director of the central meteorological office of France and president of the committee of organization, called the meeting to order, stated the purpose of the congress, and the arrangements made for it. The following officers were then elected: President, M. Mascart; vice-presidents, MM. Mohn, of Norway, Rütke, of England, and Rykatheff, of Russia; general secretary, M. Angot.

In order to expedite the proceedings it was decided that about one-



SOUSA AND HIS BAND PLAYING IN THE ALCOVE OF THE PALACE OF VARIED INDUSTRIES, ESPLANADE DES INVALIDES.

half of the one hundred papers offered should be read before five special committees that had been appointed by previous conferences, their sessions being opened to all persons interested in the subjects. These committees were as follows: Cloud measurements, Professor Hildebrandsson, of Upsala, chairman; meteorological aerostation, Professor Hergesell, of Strassburg, chairman; terrestrial magnetism, Professor Rücker, of London, chairman; solar radiation, Professor Violle, of Paris, chairman; meteorological telegraphy, Professor Pernter, of Vienna, chairman. The greatest interest centered in the committee for meteorological aerostation, appointed by the Paris meteorological conference of 1896, and the progress accomplished since that time was evident from the reports of the work done in Europe in exploring the atmosphere by means of balloons and kites. Professors Hergesell and Assmann, of Germany, and M. Teisserenc de Bort, of France, discussed the use of ballons-sondes, or balloons carrying only self-recording instruments to a height of 10 miles or more, and Messrs. Assmann, Teisserenc de Bort, and Rotch described the employment of kites in their respective countries to gain information about the atmospheric conditions up to a height of 3 miles, the first report on this subject, describing the experiments at Blue Hill, having been presented by the writer at Paris in 1896. The plan of employing balloons and kites for the simultaneous observation of the atmospheric conditions above Europe, which through international cooperation has been in operation since 1896, was further perfected by arranging ascents each month, when it was recommended that observations of clouds, to determine the movements of the air currents at various altitudes, should likewise be made. The preliminary results of the measurements of the height, velocity, and direction of drift of different kinds of clouds that had been executed during 1896-97 in various parts of the world under the direction of a committee, of which the writer is the American member, were presented by Professor Hildebrandsson. Professor Sprung, of Potsdam, described a telemeter for measuring the height of clouds from one station.

The committee for meteorological telegraphy discussed the desirability of adopting uniform hours of observation and of accelerating the dispatch of these observations in Europe by introducing the circuit system used in the United States, provided it was approved by the international telegraphic bureau at Berne. An allied subject of interest was the observatory just established by Captain Chaves in the Azores, from which daily weather reports are cabled to the meteorological services of Europe and America. The papers presented to the committee on terrestrial magnetism, by such eminent magneticians as Rücker, Moureaux, Niesten, Piltshikoff, Palazzo, Cirera, and Bauer, related to the magnetic surveys of the globe and to protecting the permanent stations from disturbing electrical influ-

ences. M. Paulsen, of Copenhagen, made an important communication on the spectrum of the aurora borealis. Excepting a summary of the present state of actinometry by the president, Professor Violle, and the presentation by M. Edelstam, of Upsala, of Angström's electrically-compensated pyrheliometer, nothing important came before the committee on solar radiation. Among the questions of general interest brought before the general assembly was the attempt to prevent hail in Italy and Hungary by firing cannon, which has recently formed the subject of an investigation by a special congress in Italy. Fr. Algué, of Manila, discussed the relation of microseismic movements of the soil to cyclones, and Fr. Dechevrens, of Jersey, compared the temperature of cyclones with the temperature in anticyclones, based on mountain observations, which he found agreed with the recent observations obtained from kites and balloons. Professor Woeikof, of St. Petersburg, urged the importance of ascertaining the conditions of the upper atmosphere in the interior of Asia and in the tropics. M. Rykatcheff, of St. Petersburg, stated the results of comparisons of thermometers, as exposed in Russia, France, and England, with Assmann's aspiration thermometer. After confirming some resolutions recommended by the subcommittees the congress was closed.

The short time that the congress was in session and the many attractions of Paris restricted the customary entertainments and visits. A banquet on the Eiffel Tower was honored by the presence of M. Leygues, minister of public instruction. Visits were made to the meteorological and magnetic observatory at the Parc Saint Maur, to the municipal observatories on the Tour Saint Jacques and in the park of Montsouris, and to the private observatory of M. Teisserenc de Bort, at Trappes, which is taking the leading part in the exploration of the high atmosphere, a work that is recognized to be of the greatest importance at the close of the nineteenth century.

(An account of this work will be found in *Sounding the Ocean of Air*, by A. Lawrence Rotch, London, 1900.)

APPENDIX I.

DECORATIONS FOR CITIZENS OF THE UNITED STATES.

In connection with the participation of the United States in the Exposition, the Government of the Republic of France bestowed decorations upon the following-named citizens of the United States:

LEGION OF HONOR.

Grand officier: FERDINAND W. PECK.

Commander (by promotion): SOMMERVILLE P. TUCK.

Officers.

Benjamin D. Woodward.	James H. Gore.	J. Pierpont Morgan.
Frederick Brackett.	Cyrus H. McCormick.	John La Farge.
Frederic J. V. Skiff.	William Deering.	Aug. St. Gaudens.
John B. Cauldwell.	Charles T. Cook.	Alexander Harrison.

Chevaliers.

Tarleton H. Bean.	Carl Hering.	George W. Ochs.
Paul Blackmar.	George Ostheimer.	Thomas P. Egan.
Alexander S. Capehart.	Milward Adams.	Alexander Gordon.
Charles A. Coolidge.	James Waite Howard.	George Eastman.
Charles R. Dodge.	Asher Carter Baker.	B. E. Huntley.
Francis E. Drake.	William F. Willoughby.	Charles Miller.
Milan H. Hulbert.	Percy Peixiotto.	James Wheeler Duntley.
John H. McGibbons.	Franklin H. Head.	Louis C. Tiffany.
Howard J. Rogers.	Hart O. Berg.	Edward W. Dayton.
Willard A. Smith.	George S. Wilkins.	G. F. Greene.
John Getz.	Francisco P. Alvarez.	John K. Rees.
George B. Post.	D. W. Seligman.	Georges M. Chartier.
A. G. Spaulding.	Clement A. Griscom.	Lazard Kahn.
Louis M. Howland.	Charles T. Schoen.	Henry M. Howe.
Gonzalo de Quesada.	E. W. Rice.	Frank Wigglesworth Clarke.
William G. Irwin.	John H. Patterson.	Henry E. Krehbiel.
J. T. Silva.	Robert Henry McCurdy.	Charles Le Blanc.
Michael H. de Young.	Lucien Wulsin.	Frank D. Millet.
Mrs. Daniel Manning.	Edward Holbrook.	John W. Alexander.
Bertha Honore Palmer.	Charles A. Moore.	Sylvain Bloch.
Ambrose Swasey.	George Westinghouse.	Thomas Hastings.
Daniel C. French.	William Watts Taylor.	Stoddard Dewey.
Francis C. Pratt.	Norton P. Otis.	Julian Story.
William J. Perry Moore.	Lyman C. Smith.	

OFFICIERS DE L'ACADEMIE.

James S. Anthony.	Ralph Leland Dougherty.	W. E. Woye.
J. A. Gurd.	Jacques Laferme.	Miss Grignard.
W. E. Tisne.		

OFFICIERS DE L'INSTRUCTION PUBLIQUE.

William Shaw Ward.	Linden Wallace Bates.	Charles F. MacRin.
Spalding de Garmendia.	Mrs. Stephen Field.	George F. Kunz.
Charles H. Simms.	Mrs. Gilbert MacClurg.	C. S. Crowninshield.
Louis A. Risse.	Henry L. Taylor.	Robert W. Blackwell.
Selim H. Peabody.	Henry B. Snell.	B. C. Batcheller.
Joseph J. Leidy.	Charles D. Seeberger.	Mrs. John P. Jones.
Louis E. A. de Goll.	John A. Ockerson.	Miss Anna Tolman Smith.
William E. Crist.		

APPENDIX II.

Following is a list of the United States exhibitors receiving awards, and the grade thereof, in the various permanent and temporary competitions in Group VIII, horticulture and arboriculture (see first paragraph, page 455, Vol. III):

APPENDIX A.

PERMANENT EXHIBITS IN UNITED STATES SECTION.

GROUP VIII.—*Horticulture and arboriculture.*

Class 43.—Appliances and methods of horticulture and arboriculture.

COLLECTIONS.

- Albaugh-Georgia Orchard Company, Fort Valley, Ga.: Photographs of orchard and fruit-shipping scenes.
- S. L. Allen & Co., Philadelphia, Pa.: "Planet, Jr.," horticultural implements.
- Audubon Park Association, New Orleans, La.: Collection of photographs of park scenes.
- Baron de Hirsch Agricultural Industrial School, Woodbine, N. J.: Collection of horticultural photographs.
- Bellefontaine Cemetery, St. Louis, Mo.: Collection of photographs of landscape features of cemetery.
- W. Atlee Burpee & Co., Philadelphia, Pa.: Collection of photographs of seed farms.
- California Nursery Company, Niles, Cal.: Collection of photographs of nursery and orchards.
- California Paris Exposition commission: Collection of horticultural photographs.
- Cemetery of Spring Grove, Cincinnati, Ohio: Collection of photographs of landscape features of cemetery.
- Coldwell Lawn Mower Company, Newburg, N. Y.: Lawn mowers.
- Washington E. Conner, New York, N. Y.: Collection of photographs of private grounds at New Smyrna, Fla.
- Ellwood Cooper, Santa Barbara, Cal.: Collection of photographs of olive orchard and oil mill.
- L. F. Dintelmann, Belleville, Ill.: Photographs of nursery and orchard scenes.
- Henry A. Dreer, Philadelphia, Pa.: Collection of photographs of aquatics and flowering plants.
- Florida East Coast Hotel Company, St. Augustine, Fla.: Collection of photographs of horticultural hotel grounds.
- Graceland Cemetery Company, Chicago, Ill.: Collection of photographs of landscape features of cemetery.
- Timothy M. Griffing, Riverhead, N. Y.: Collection of photographs of landscape features of private grounds.
- H. H. Hunnewell, Wellesley, Mass.: Collection of photographs of private grounds.
- F. C. Johnson, Kishwaukee, Ill.: Collection of photographs of orchard and cider mill.

- Addison Lysle, Allegheny City, Pa.: Photographs of fruit ranch in California.
- Maryland Agricultural Experiment Station: Collection of photographs of Maryland orchards, vineyards, etc.
- Michigan Seed Company, South Haven, Mich.: Collection of photographs of seed farms and orchards in Michigan and Florida.
- Milwaukee park commission, Milwaukee, Wis.: Collection of photographs of landscape features of parks.
- National Cash Register Company, Dayton, Ohio: Collection of photographs of horticultural features of factory buildings and homes of operatives.
- Thos. T. Newby, Carthage, Ind.: Collection of horticultural features of an Indiana farm.
- A. S. Packard, Covert, Mich.: Collection of photographs of orchards, packing house, etc.
- Pennsylvania Railroad Company, Philadelphia, Pa.: Collection of photographs of horticultural features of station grounds.
- Harry Postlethwaite, San Jose, Cal.: Collection of photographs of cherry orchard.
- George C. Roeding, Fresno, Cal.: Collection of photographs of nurseries and orchards.
- St. Paul board of park commissioners, St. Paul, Minn.: Collection of photographs of landscape features of parks and landscapes.
- Mrs. Kinton Stevens, Santa Barbara, Cal.: Collection of photographs of tropical fruit and ornamental trees.
- Nicholas Studer, Washington, D. C.: Photographs of *Nephrolepis* ferns.
- University of Idaho, Moscow, Idaho: Collection of photographs of Idaho orchards and gardens.
- J. C. Vaughan, Chicago, Ill.: Photographs of seed farm and propagating houses.
- Whitman & Barnes Manufacturing Company, Akron, Ohio: Horticultural impelments.
- Woodmere Cemetery, Detroit, Mich.: Collection of photographs of landscape features of cemetery.
- Division of Pomology, United States Department of Agriculture: Collection of single photographs of horticultural organizations, etc.
- American Association of Nurserymen: Photograph of association.
- American Pomological Society: Photograph of society.
- Illinois State Horticultural Society: Photograph of officers of society.
- Kansas State Horticultural Society: Photograph of officers of society.
- Maryland State Horticultural Society: Photograph of officers of society.
- Massachusetts Horticultural Society: Photograph of horticultural hall.
- New Jersey State Horticultural Society: Photograph of society.
- Northwest Fruit Growers' Association: Photograph of association.
- Ohio State Horticultural Society: Photograph of officers of society.
- Peninsula Horticultural Society: Photograph of society.
- Rhode Island Horticultural Society: Photograph of society.
- Rumford Historical Association: Monument to original Baldwin apple tree.
- South Dakota Horticultural Society: Photograph of society.

Class 45.—Fruit trees and fruits.

FRUITS.

- California Paris Exposition commission: Collection of fruits in preserving solution.
- Division of Pomology, United States Department of Agriculture: Collection of 800 facsimile models of fruits grown in the United States.

NUTS.

- California Paris Exposition commission: Collection of almonds and walnuts.
- A. G. Delmas, Scranton, Miss.: Collection of four varieties of pecans.
- Stuart Pecan Company, Ocean Springs, Miss.: Collection of four varieties of pecans.

Texas Seed and Pecan Company, Fort Worth, Tex.: Collection of two varieties of pecans.

Woldert Grocery Company, Tyler, Tex.: Collection of seven varieties of pecans.

B. M. Young, Morgan City, La.: Collection of twenty-four varieties of pecans.

Class 46.—Ornamental trees, shrubs, plants, and flowers.

Lothrop & Higgins, East Bridgewater, Mass.: Collection of dahlias in open air.

Michigan Seed Company, South Haven, Mich.: Collection of dahlias and gladoli in open air.

Class 47.—Greenhouse plants.

N. Studer, Washington, D. C.: Nephrolepis ferns.

Class 48.—Seeds and plants for gardens and nurseries.

Michigan Seed Company, South Haven, Mich.: Collection of beans and garden seeds.

Trumbull & Beebe, San Francisco, Cal.: Collection of vegetable seeds.

APPENDIX B.

AWARDS ON PERMANENT EXHIBITS IN GROUP VIII, HORTICULTURE AND ARBORICULTURE.

Class 43.—Appliances and methods of horticulture and arboriculture.

Gold medals—3:

Allen & Co., S. L., Philadelphia, Pa.: "Planet, jr.," horticultural implements.
Cemetery of Spring Grove, Cincinnati, Ohio: Collection of horticultural photographs.

National Cash Register Company, Dayton, Ohio: Collection of horticultural photographs.

Silver medals—17:

Albaugh-Georgia Orchard Company, Fort Valley, Ga.: Collection of horticultural photographs.

Audubon Park Association, New Orleans, La.: Collection of horticultural photographs.

Baron de Hirsch Agricultural Industrial School, Woodbine, N. J.: Collection of horticultural photographs.

Bellefontaine Cemetery, St. Louis, Mo.: Collection of horticultural photographs.

Burpee & Co., W. Atlee, Philadelphia, Pa.: Collection of horticultural photographs.

California commission to Paris Exposition, San Francisco, Cal.: Collection of horticultural photographs.

California Nursery Company, Niles, Cal.: Collection of horticultural photographs.

Coldwell Lawn Mower Company, Newburg, N. Y.: Lawn mowers.

Cooper, Ellwood, Santa Barbara, Cal.: Collection of horticultural photographs.

Graceland Cemetery, Chicago, Ill.: Collection of horticultural photographs.

Hunnewell, H. H., 130 Beacon street, Boston, Mass.: Collection of horticultural photographs.

Michigan Seed Company, South Haven, Mich.: Collection of horticultural photographs.

Milwaukee park commission, Milwaukee, Wis.

Roeding, George C., Fresno, Cal.: Collection of horticultural photographs.

Silver medals—Continued.

St. Paul board of park commissioners, St. Paul, Minn.: Collection of horticultural photographs.

Whitman & Barnes Manufacturing Company, Akron, Ohio: Horticultural implements.

Woodmere Cemetery, Detroit, Mich.: Collection of horticultural photographs.

Bronze medals—7:

Dreer, Henry A., Philadelphia, Pa.: Collection of horticultural photographs.

Griffing, Timothy M., Riverhead, N. Y.: Collection of horticultural photographs.

Maryland Agricultural Experiment Station, College Park, Md.: Collection of horticultural photographs.

Newby, Thomas T., Carthage, Ind.: Collection of horticultural photographs.

Packard, A. S., Covert, Mich.: Collection of horticultural photographs.

Postlethwaite, Harry, San Jose, Cal.: Collection of horticultural photographs.

University of Idaho, Moscow, Idaho: Collection of horticultural photographs.

Honorable mention—6:

Conner, Washington E., New Smyrna, Fla.: Collection of horticultural photographs.

Dintlemann, L. F., Belleville, Ill.: Collection of horticultural photographs.

Florida East Coast Hotel Company, St. Augustine, Fla.: Collection of horticultural photographs.

Johnson, F. C., Kishwaukee, Ill.: Collection of horticultural photographs.

Pennsylvania Railroad Company, Philadelphia, Pa.: Collection of horticultural photographs.

Stevens, Mrs. Kinton, Santa Barbara, Cal.: Collection of horticultural photographs.

*Class 45.—Fruit trees and fruits.*Grand prize—1:¹

Division of Pomology, United States Department of Agriculture: Collection of facsimile models of fruits of the United States.

Gold medal—1:

California commission to Paris Exposition: Collection of fruits in preserving solution in glass jars.

Class 48.—Horticultural seeds and nursery stocks.

Silver medal—1:

Trumbull & Beebe, San Francisco, Cal.: Collection of garden seeds.

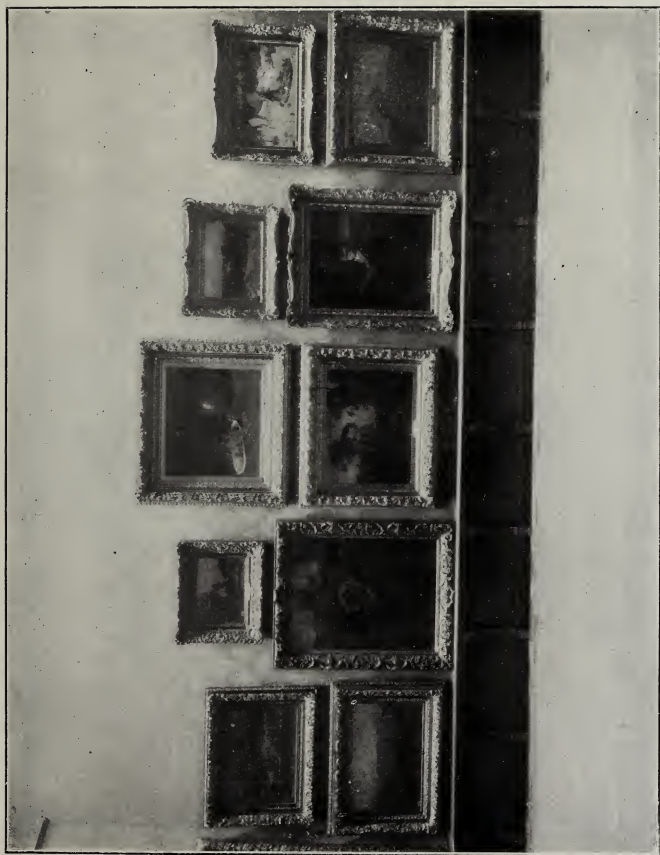
Honorable mention—1:

Michigan Seed Company, South Haven, Mich.: Collection of beans and garden seeds.

RECAPITULATION OF AWARDS ON PERMANENT EXHIBITS.

Grand prize.....	1
Gold medals.....	4
Silver medals.....	18
Bronze medals.....	7
Honorable mention.....	7
Total.....	37

¹ These awards on permanent exhibits in class 45 were made in August, 1900, and were published in the "Liste des Recompenses," August 18, 1900. They do not appear in the "Liste des Recompenses" received in Washington, May 28, 1901, having apparently been overlooked in the compilation of the latter publication. It is expected that the error will be corrected through correspondence now in progress.



VIEW IN UNITED STATES SPACE, GRAND PALACE OF FINE ARTS, GROUP II.

APPENDIX C.

Exhibitors from United States in temporary competitions in Group VIII, Horticulture, arranged by States.

CLASS 45.—FRUIT TREES AND FRUITS.

[Crop of 1899.]

Exhibitors and addresses.	Competitions.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
<i>United States: General collection.</i>												
Division of Pomology, United States Department of Agriculture	1	1	1	1	1	1	1	1	1	1	1	1
<i>California.</i>												
California Paris Exposition Commission			1	1	1	1	1					
Arlington Heights Fruit Co., Riverside, Cal.			1	1	1	1	1		1			
Phil. M. Baier, Porterville, Cal.									1			
Geo. Frost, Porterville, Cal.									1			
Henry E. Fuller, Riverside, Cal.									1			
Chas. E. Maud, Riverside, Cal.									1			
Riverside Orange Co., Riverside, Cal.			1						1			
<i>Connecticut.</i>												
Connecticut Pomological Society	1					1						
C. M. Hotchkiss, Cheshire, Conn.		1										
Elbert Manchester, Bristol, Conn.			1									
J. H. Merriman, New Britain, Conn.						1	1	1				
Chas. Moore, Southington, Conn.						1						
E. B. Platt, Milford, Conn.	1											
Geo. F. Platt, Milford, Conn.	1											
Geo. F. Platt & Son, Milford, Conn.	1											
N. D. Platt, Milford, Conn.	1											
E. Rogers, Bristol, Conn.						1						
E. C. Warner, New Haven, Conn.					1	1						
<i>Idaho.</i>												
I. B. Perrine, Blue Lakes, Idaho.				1	1	1	1	1				
<i>Illinois.</i>												
Illinois State Horticultural Society	1	1	1	1	1	1	1	1	1	1	1	1
H. A. Aldrich, Neoga, Ill.		1	1			1	1	1	1	1	1	1
M. A. Baldwin, Jacksonville, Ill.								1	1	1		
S. J. Beer, Vandalia, Ill.									1			
Arthur Bryant, Princeton, Ill.					1	1						
L. R. Bryant, Princeton, Ill.		1	1	1	1	1	1			1		
A. Caldwell, Griggsville, Ill.								1	1			
W. R. Crain, Villa Ridge, Ill.							1	1	1			
L. F. Dintlemann, Belleville, Ill.					1							
H. M. Dunlap, Savoy, Ill.		1	1	1	1	1	1	1	1	1	1	1
C. H. Francis, Altamont, Ill.					1							
Henry Harpster, St. Peter, Ill.				1								
Joseph Husband, Leanderville, Ill.				1	1	1		1	1	1		
S. D. LaRash, Pekin, Ill.												
W. D. Linton, Patoka, Ill.												
J. H. Luffain, Villa Ridge, Ill.						1						
F. S. Phoenix, Bloomington, Ill.					1	1						
Fred Shaw, Summer Hill, Ill.		1	1	1	1	1					1	1
S. G. Soverhill, Tiskilwa, Ill.					1		1	1	1			
C. G. Winn, Griggsville, Ill.							1	1	1	1	1	1
W. A. Young, Butler, Ill.		1	1	1		1	1	1	1	1	1	1
<i>Indiana.</i>												
Indiana Horticultural Society		1	1		1							
Dill Addleman, Richmond, Ind.				1	1	1						
Albert Brown, Alquina, Ind.			1									
Joe A. Burton, Orleans, Ind.							1	1				
Geo. Ebersoll, Centerville, Ind.				1								
Alice Elason, Centerville, Ind.					1							
Jesse P. Elliott, Alquina, Ind.			1									
Joseph Kempton, Centerville, Ind.												
Columbus King, Centerville, Ind.					1							
Enos Kitterman, Centerville, Ind.				1								
Thos. T. Newby, Carthage, Ind.		1	1									
William Newland, Alquina, Ind.			1	1								
Walter S. Ratliff, Richmond, Ind.					1							
Charley Rodenburg, Richmond, Ind.				1	1							

*Exhibitors from United States in temporary competitions in Group VIII, Horticulture,
arranged by States—Continued.*

CLASS 45.—FRUIT TREES AND FRUITS—Continued.

[Crop of 1899.]

Exhibitors and addresses.	Competitions.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
<i>Indiana—Continued.</i>												
Elmira Russell, Richmond, Ind.				1								
Joseph Rutherford, Alquina, Ind.			1									
Elias Scholl, Alquina, Ind.			1									
Richard Sedgwick, Richmond, Ind.					1							
Ross Thomas, Alquina, Ind.			1									
<i>Kansas.</i>												
Kansas State Horticultural Society.		1										
John Alters, Belleplaine, Kans.		1										
G. A. Blair, Mulvane, Kans.		1										
Walter Mason, Belleplaine, Kans.		1										
Calvin Myers, Mulvane, Kans.		1										
J. O. Parker, Lakin, Kans.						1	1	1				
Ryan & Richardson, Leavenworth, Kans.			1									
J. H. Troutman, Lakin, Kans.					1	1						
<i>Maine.</i>												
Maine State Pomological Society.		1	1									
W. P. Atherton, Hallowell, Me.		1										
F. H. Axtell, Oakland, Me.			1									
C. S. Phinney, Oakland, Me.					1							
Joseph Moulton, Springvale, Me.												
<i>Massachusetts.</i>												
Prescott Williams, Williamsburg, Mass.		1										
<i>Michigan.</i>												
O. R. Pierce, Hudson, Mich.		1	1		1							
<i>Missouri.</i>												
Missouri State Horticultural Society.		1	1	1	1	1	1	1	1	1	1	
Frank Bailey, Wilson, Mo.												
J. W. Bailey, Mountain Grove, Mo.												
M. F. Berry, Hallville, Mo.		1										
Theodore Boss, White Church, Mo.			1									
M. F. Brown, Salem, Mo.												
D. R. Edwards, Versailles, Mo.				1		1						
W. T. Flourney, Marionville, Mo.					1	1						
W. A. Gardner, West Plains, Mo.						1						
L. D. Gunning, Brashear, Mo.								1	1		1	
F. M. Houk, Brashear, Mo.				1								
J. M. Hanna, West Plains, Mo.								1				
G. L. Hillhouse, Pierce City, Mo.		1										
G. G. James, Exeter, Mo.												
Jones & Primel, Cuba, Mo.												1
J. L. Lucas, Salem, Mo.												
Mrs. J. Mage, (?) Salem, Mo.												
T. E. Malone, Wilson, Mo.								1	1	1	1	
J. E. May, Wilson, Mo.												
C. F. Mount, Mountain View, Mo.												
A. Nelson, Lebanon, Mo.		1	1	1		1	1	1	1	1	1	
J. A. Nelson, Marshfield, Mo.												
Ozark Orchard Co., Goodman, Mo.											1	1
J. Pearman, Dent, Mo.					1							
W. M. Pearson, Mexico.				1								
Ray County Horticultural Society, Missouri.												
F. H. Roberson, Purdy, Mo.		1					1					
W. M. Roberts, Republic, Mo.		1		1		1						
D. A. Robnett, Columbia, Mo.			1	1								
J. Roschi, Nevada, Mo.												
O. S. Rousch, Salem, Mo.								1	1		1	1
G. L. Sessen, West Plains, Mo.		1										
A. Shirley, Salem, Mo.					1							
J. M. Spadden, Salem, Mo.												
Geo. A. Stone, Richmond, Mo.						1	1	1	1	1		
Trimball, McGill & Co., Seymour, Mo.												
B. Washington, Stone Hill, Mo.												
H. R. Wayman, Alvord, Mo.		1	1									
Webster County Horticultural Society, Mo.												

Exhibitors from United States in temporary competitions in Group VIII, Horticulture, arranged by States—Continued.

CLASS 45.—FRUIT TREES AND FRUITS—Continued.

[Crop of 1899.]

Exhibitors and addresses.	Competitions.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
<i>Missouri—Continued.</i>												
P. Weller, Salem, Mo.....												
J. S. Wilson, Wilson, Mo.....				1		1						
C. A. Wood, Brashear, Mo.....				1								
B. C. Woodrome, West Plains, Mo.....					1	1						
L. B. Woodside, Salem, Mo.....												
<i>Nebraska.</i>												
Nebraska State Horticultural Society.....		1	1	1	1	1	1				1	
W. R. Harris, Tecumseh, Nebr.....		1	1			1						
Frank Jelincek, Crete, Nebr.....												
M. Kubicek, Crete, Nebr.....												
Marshall Bros., Arlington, Nebr.....		1	1	1	1	1	1	1	1	1	1	1
E. F. Stephens, Crete, Nebr.....				1		1						
<i>New Mexico.</i>												
New Mexico College of Agriculture.....				1	1							
Frank Burk, Mesilla Park, N. Mex.....					1							
N. K. Falkner, Mesilla Park, N. Mex.....				1	1		1	1	1			
Geo. A. Millman, Las Cruces, N. Mex.....				1	1	1						
Robt. Taylor, Las Cruces, N. Mex.....				1								
<i>New York.</i>												
New York State commission.....		1	1	1	1	1	1	1	1	1		
Marcus Ansley, Billsboro, N. Y.....					1							
G. Baker, Junius, N. Y.....		1		1	1	1		1	1			
W. A. Bassett, Farmer, N. Y.....		1	1									
Elmer Bradley, Lyons, N. Y.....				1								
S. Bradley, Leroy, N. Y.....					1							
W. L. Bradley, Leroy, N. Y.....				1	1	1	1	1	1			
S. E. Burgdorf, Junius, N. Y.....		1			1	1						
Charles Burnett, Lyons, N. Y.....				1								
Merritt M. Clark, Bedford, N. Y.....					1	1		1				
H. Cook & Son, Pavilion, N. Y.....												
W. Dorman, Billsboro, N. Y.....		1	1									
A. H. Dutton, Youngstown, N. Y.....				1								
W. D. Facer, Lyons, N. Y.....		1	1									
Foster Bros., Halls Corners, N. Y.....				1	1	1						
P. Gleason, Leroy, N. Y.....			1	1	1	1	1	1	1	1	1	
J. Hanlon, Leroy, N. Y.....					1							
B. W. Hartwell, Leroy, N. Y.....			1	1	1	1						
C. N. Leonard, Penfield, N. Y.....				1	1							
Nusbickel & Lang, Geneva, N. Y.....												
W. S. Page, Bethany, N. Y.....		1			1							
Joseph Patchett, Billsboro, N. Y.....			1		1	1						
Geo. T. Powell, Ghent, N. Y.....				1								
Mrs. Thos. R. Robinson, Halls Corners, N. Y.....				1	1	1		1	1	1	1	1
F. L. B. Taft, Leroy, N. Y.....					1							
Delos Tenny, Hilton, N. Y.....		1										
Chas. Vanderbilt, Lyons, N. Y.....												
Wm. Ward, Leroy, N. Y.....					1							
W. W. Williams, Hilton, N. Y.....			1			1						
A. Wood, Carlton, N. Y.....					1	1						
<i>North Carolina.</i>												
North Carolina department of agriculture.....		1		1	1	1	1					
Jacob Bailey, Green Mountain, N. C.....				1								
Newton Banner, Sugargrove, N. C.....												
Geo. E. Boggs, Livingston, N. C.....				1	1	1	1	1	1	1		
T. K. Bruner, Waynesville, N. C.....						1						
Geo. W. Coffey, Kelsey, N. C.....				1								
Thos. A. Coffey, Kelsey, N. C.....												
Moses H. Cone, Blowing Rock, N. C.....							1	1	1			
J. A. Dula, Lenoir, N. C.....				1								
W. M. Flack, Cane River, N. C.....		1										
J. S. Hatley, Hudson, N. C.....							1	1	1			
Wilson Hensley, Baldcreek, N. C.....		1			1							
D. A. Letterman, Green Mountain, N. C.....				1								
C. R. McInturf, Paintgap, N. C.....								1				
C. L. McPeeters, Baldcreek, N. C.....		1										
D. R. Proffitt, Burnsville, N. C.....					1							

Exhibitors from United States in temporary competitions in Group VIII, Horticulture, arranged by States—Continued.

CLASS 45.—FRUIT TREES AND FRUITS—Continued.

[Crop of 1899.]

Exhibitors and addresses.	Competitions.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
<i>North Carolina—Continued.</i>												
G. D. Ray, Burnsville, N. C.					1							
J. S. Ray, Burnsville, N. C.					1	1						
J. E. Smith, Banners Elk, N. C.					1							
W. B. Wray, Cane River, N. C.		1										
Thos. Wright, Kelsey, N. C.						1						
<i>Pennsylvania.</i>												
W. H. Black, Floradale, Pa.					1							
S. Bream, Biglerville, Pa.					1							
J. V. Garrettson & Son, Floradale, Pa.					1							
A. W. Griest, Arendtsville, Pa.					1	1		1		1		
Gabriel Hiester, Harrisburg, Pa.		1										
Daniel Hoffman, Arendtsville, Pa.					1							
J. B. Johnson, New Wilmington, Pa.												
R. Lawyer, Biglerville, Pa.					1		1	1	1	1	1	1
Peder Pedersen, Huntingdon Valley, Pa.				1								
L. J. Raffensparger, Arendtsville, Pa.					1							
A. J. Weidner, Arendtsville, Pa.												
<i>Virginia.</i>												
Virginia State Horticultural Society		1	1	1	1							
Geo. A. Coyner, Waynesboro, Va.			1									
James Dickie, Massies Mill, Va.				1			1					
Haden Bros., Crozet, Va.												
M. L. Hatcher, Reba, Va.					1		1					
J. B. Johnson, Manassas, Va.		1	1									
Geo. E. Murrell, Fontella, Va.					1							
Alex. Shirley, Dent, Va.					1							
Paul & Ellison, Crozet, Va.												
Walter Whately, Crozet, Va.												
C. B. Wood, Washington, Va.							1	1	1		1	
C. B. Wood and J. J. Miller, Washington, Va.					1							
<i>Washington.</i>												
E. F. Babcock, Waitsburg, Wash.		1		1	1	1	1					
A. N. Livingston, Walla Walla, Wash.		1				1			1			
Frank Rider, Thornton, Wash.				1								
J. A. Ross, Thornton, Wash.				1								
Hughes Taylor, Waitsburg, Wash.		1		1		1						
<i>West Virginia.</i>												
West Virginia State Horticultural Society		1	1		1							
Chas. Brown's Sons, Arroyo, W. Va.		1	1		1							
R. H. Brown, Arroyo, W. Va.						1						
J. T. Catron, Martinsburg, W. Va.												
Alex. Clohan, Martinsburg, W. Va.												
E. W. Hewitt, Arroyo, W. Va.												
S. H. McKeown, Gerrardstown, W. Va.		1					1	1				
Mahan Produce Company, Arroyo, W. Va.												
G. P. Miller, Martinsburg, W. Va.												
W. S. Miller, Gerrardstown, W. Va.			1									

[Crop of 1900.]

<i>Arkansas.</i>												
W. G. Vincenheller, pomologist, experiment station, Fayetteville, Ark.											1	1
J. F. Baine, Lincoln, Ark.												1
W. Brooks, Rhea, Ark.											1	1
W. Miller, Rhea, Ark.											1	1
W. M. Norwood, Rhea, Ark.											1	1
A. Rich, Rhea, Ark.											1	1
<i>Delaware.</i>												
Peninsula Horticultural Society, Dover, Del.								1		1		
Farmers' Produce Association of Delaware.								1	1	1		
S. H. Derby, Woodside, Del.								1	1	1		

*Exhibitors from United States in temporary competitions in Group VIII, Horticulture,
arranged by States—Continued.*

CLASS 45.—FRUIT TREES AND FRUITS—Continued.

[Crop of 1900.]

Exhibitors and addresses.	Competitions.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
<i>Missouri—Continued.</i>												
Perry Huff, Versailles, Mo.											1	1
W. C. Keith, Mayview, Mo.											1	1
Wm. R. Keith, Mayview, Mo.											1	1
T. E. Malone, Wilson, Mo.												
N. F. Murray & Sons, Oregon, Mo.										1	1	
Ira Neff, Marionville, Mo.												
Olden Fruit Co., Olden, Mo.										1		
Ozark Orchard Co., Goodman, Mo.										1	1	1
Homer Reed, Kansas City, Mo.												
D. A. Robnett, Columbia, Mo.										1	1	1
C. L. Sessen, West Plains, Mo.											1	1
Fred D. Smith, Lexington, Mo.											1	1
Geo. W. Smith, Mayview, Mo.												1
Jas. T. Smith, Mayview, Mo.											1	
Geo. A. Stone, Richmond, Mo.										1	1	1
Ed. Taubman, Lexington, Mo.											1	
Jas. S. Vickars, Mayview, Mo.												1
<i>New York.</i>												
New York State Commission, New York									1	1	1	1
M. Ansley, Billsboro, N. Y.									1	1	1	1
David K. Bell, West Brighton, N. Y.											1	1
John Benning, Lyons, N. Y.								1				
L. M. Blakeley, Lyons, N. Y.									1			1
Benj. Bradley, Lyons, N. Y.									1	1		
Geo. H. Bradley & Son, Lake Road, N. Y.									1			
J. Elmer Bradley, Lyons, N. Y.									1			1
W. L. Bradley, Leroy, N. Y.										1		
Henry Bremer, Lyons, N. Y.								1	1		1	1
D. S. Chamberlin, Lyons, N. Y.											1	1
J. B. Collamer & Son, Hilton, N. Y.										1	1	1
Ellwanger & Barry, Rochester, N. Y.										1		
Robt. T. Ennis, Alloway, N. Y.									1			
Fred Ganzs, Lyons, N. Y.								1				
Albert Goetzman, Lyons, N. Y.									1			
Mrs. J. R. Goodman, Lyons, N. Y.									1	1		
Henry F. Huston, Lockport, N. Y.									1			1
Wesley Labor, Lockport, N. Y.												
C. N. Leonard, Penfield, N. Y.										1	1	1
New York State Agricultural Experiment Station, Geneva, N. Y.										1	1	1
John Paytor, Lyons, N. Y.								1	1			
W. H. Pillow, Reeds Corners, N. Y.										1	1	1
Geo. T. Powell, Ghent, N. Y.										1	1	1
D. L. Prisch, Middleport, N. Y.											1	1
Duncan Rhind, Canandaigua, N. Y.										1	1	
Miss Alla Rogers, Lyons, N. Y.												
W. E. Shaeffer, Lockport, N. Y.										1	1	1
E. Smith & Son, Geneva, N. Y.										1		
W. L. Smith, Hilton, N. Y.										1	1	1
W. & T. Smith Co., Geneva, N. Y.									1	1		
George W. Spencer, Westfield, N. Y.											1	1
Delos Tenny, Hilton, N. Y.										1	1	1
Duane Van Shaler, Hilton, N. Y.												1
Henry B. Warnecke, Lyons, N. Y.												
Woodward & Jaques, Wrights Corners, N. Y.										1		
<i>North Carolina.</i>												
North Carolina Department of Agriculture.											1	1
Wilson Hensley, Cane River, N. C.											1	1
C. L. McPeeters, Baldcreek, N. C.											1	1
R. F. Ray, Baldcreek, N. C.											1	1
R. H. Ray, Cane River, N. C.											1	1
W. B. Wray, Cane River, N. C.											1	1
<i>Ohio.</i>												
Ohio State Horticultural Society												
E. G. Cox, Bradrick, Ohio											1	1
W. W. Farnsworth, Waterville, Ohio											1	1
L. B. Pierce, Tallmadge, Ohio											1	1

Exhibitors from United States in temporary competitions in Group VIII, Horticulture, arranged by States—continued.

CLASS 45.—FRUIT TREES AND FRUITS—Continued.

[Crop of 1900.]

Exhibitors and addresses.	Competitions.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
<i>Pennsylvania.</i>												
Howard A. Chase, Mount Pocono, Pa.....									1	1	1	1
<i>Virginia.</i>												
Virginia State Horticultural Society.....											1	1
W. S. Hiett, Winchester, Va.....											1	
S. L. Lupton, Winchester, Va.....											1	1
Geo. E. Murrell, Fontella, Va.....											1	1
<i>Washington.</i>												
E. F. Babcock, Waitsburg, Wash.....										1	1	1

CLASS 46.—ORNAMENTAL TREES, SHRUBS, PLANTS, AND FLOWERS.

Exhibitor and address.	Competition.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
W. Atlee Burpee & Co., Philadelphia, Pa.....				1								

APPENDIX D.

SUMMARY OF AWARDS TO AMERICAN EXHIBITORS IN TEMPORARY COMPETITIONS IN GROUP VIII, HORTICULTURE.

Class 45.—Fruit trees and fruits.

[Temporary competition, May 9, 1900.]

First prizes—4:

Collections of apples, crop of 1899—

Division of Pomology, United States Department of Agriculture: 48 varieties,
15 States.

Illinois State Horticultural Society: 7 varieties.

Missouri State Horticultural Society: 7 varieties.

New York State commission: 9 varieties.

Second prizes—3:

Collections of apples, crop of 1899—

Connecticut Pomological Society: 7 varieties.

Indiana Horticultural Society: 10 varieties.

Nebraska State Horticultural Society: 9 varieties.

Third prizes—4:

Collections of apples, crop of 1899—

Kansas State Horticultural Society: 5 varieties.

North Carolina Department of Agriculture: 5 varieties.

Virginia State Horticultural Society: 6 varieties.

Gabriel Hiester, Harrisburg, Pa.: 3 varieties.

[Temporary competition, May 23, 1900.]

First prizes—4:

Collections of apples, crop of 1899—

Division of Pomology, United States Department of Agriculture: 40 varieties,
12 States.

Illinois State Horticultural Society: 7 varieties.

Missouri State Horticultural Society: 11 varieties.

New York State commission: 5 varieties.

Second prizes—8:

Collections of apples, crop of 1899—

Indiana Horticultural Society: 5 varieties.

Maine State Pomological Society: 4 varieties.

Nebraska State Horticultural Society: 4 varieties.

Virginia State Horticultural Society: 5 varieties.

West Virginia Horticultural Society: 3 varieties.

Moses H. Cone, Blowing Rock, N. C.: 3 varieties.

-W. R. Harris, Tecumseh, Nebr.: 8 varieties.

Thos. T. Newby, Carthage, Ind.: 9 varieties.

Third prize—1:

Collection of apples, crop of 1899—

O. R. Pierce, Hudson, Mich.: 1 variety.

Honorable mention—10 (single baskets):

Varieties—

Ben Davis, W. R. Harris, Tecumseh, Nebr.

Ben Davis, H. A. Aldrich, Neoga, Ill.

Esopus, Moses H. Cone, Blowing Rock, N. C.

Esopus, Joseph Patchett, Billsboro, N. Y.

Grimes's Golden, H. M. Dunlap, Savoy, Ill.

McIntosh, Marshall Brothers, Arlington, Nebr.

Doctor syn. Newby, T. T. Newby, Carthage, Ind.

Vandevere, Fred Shaw, Summerhill, Ill.

Willow, Charles Brown's Sons, Arroyo, W. Va.

Winesap, H. A. Aldrich, Neoga, Ill.

[Temporary competition, June 13, 1900.]

First prizes—7:

Collections of apples, crop of 1899—

Division of Pomology, United States Department of Agriculture: 53 varieties,
12 States.

Illinois State Horticultural Society: 7 varieties.

Missouri State Horticultural Society: 10 varieties.

Nebraska State Horticultural Society: 4 varieties.

New York State commission: 9 varieties.

Collection of oranges, lemons, and pomelos—

California State commission: 5 varieties.

Collection of oranges and lemons in commercial packages—

California State commission: 4 varieties.

Second prizes—7:

Collections of apples, crop of 1899—

North Carolina department of agriculture: 3 varieties.

Virginia State Horticultural Society: 4 varieties.

E. F. Babcock, Waitsburg, Wash.: 7 varieties.

Elbert Manchester, Bristol, Conn.: 6 varieties.

Marshall Brothers, Arlington, Nebr.: 4 varieties.

I. B. Perrine, Blue Lakes, Idaho: 1 variety.

E. F. Stephens, Crete, Nebr.: 5 varieties.

Third prizes—2:

Collections of apples, crop of 1899—

P. Pedersen, Huntingdon Valley, Pa.: 2 varieties.

New Mexico College of Agriculture: 4 varieties.

Class 46.—Ornamental trees, shrubs, plants, and flowers.

First prize—1:

Collection of sweet peas in pots—

W. Atlee Burpee & Co., Philadelphia, Pa.: 50 varieties.

Class 45.—Fruit trees and fruits.

[Temporary competition June 27, 1900.]

First prizes—8:

Collections of apples, crop of 1899—

Division of Pomology, United States Department of Agriculture: 40 varieties,
15 States.

Illinois State Horticultural Society: 7 varieties.

Missouri State Horticultural Society: 7 varieties.

Nebraska State Horticultural Society: 4 varieties.

New York State commission: 9 varieties.

Virginia State Horticultural Society: 4 varieties.

P. Gleason, Leroy, N. Y.: 6 varieties.

Collection of oranges and lemons in commercial packages—

California State commission: 3 varieties.

Second prizes—4:

Collections of apples, crop of 1899—

Indiana Horticultural Society: 5 varieties.

New Mexico College of Agriculture: 4 varieties.

North Carolina department of agriculture: 8 varieties.

E. C. Warner, New Haven, Conn.: 5 varieties.

Third prizes—3:

Collections of apples, crop of 1899—

E. F. Babcock, Waitsburg, Wash.: 4 varieties.

I. B. Perrine, Blue Lakes, Idaho: 1 variety.

A. I. Weidner, Arendtsville, Pa.: 3 varieties.

[Temporary competition July 18, 1900.]

First prizes—7:

Collections of apples, crop of 1899—

Division of Pomology, United States Department of Agriculture: 28 varieties,
11 States.

Illinois State Horticultural Society: 9 varieties.

Missouri State Horticultural Society: 4 varieties.

New York State commission: 8 varieties.

H. A. Aldrich, Neoga, Ill.: 4 varieties.

William A. Young, Butler, Ill.: 3 varieties.

Collection of oranges and lemons—

California State commission: 3 varieties.

Second prizes—3:

Collections of apples, crop of 1899—

Connecticut Pomological Society: 3 varieties.

Nebraska State Horticultural Society: 3 varieties.

North Carolina department of agriculture: 3 varieties.

Third prizes—3:

Collections of apples, crop of 1899—

James Dickie, Massies Mills, Va.: 1 variety.

I. B. Perrine, Blue Lakes, Idaho: 2 varieties.

J. O. Parker, Lakin, Kans.: 3 varieties.

[Temporary competition August 8, 1900.]

First prizes—6:

Collections of apples, crop of 1899—

Division of Pomology, United States Department of Agriculture: 21 varieties, 13 States.

Illinois State Horticultural Society: 6 varieties.

Missouri State Horticultural Society: 2 varieties.

New York State commission: 7 varieties.

C. G. Winn, Griggsville, Ill.: 2 varieties.

Collection of oranges, crop of 1899-1900—

California State commission: 2 varieties.

Second prizes—3:

Collections of apples, crop of 1899—

Nebraska State Horticultural Society: 1 variety.

North Carolina department of agriculture: 2 varieties.

Joe A. Burton, Orleans, Ind.: 2 varieties.

[Temporary competition August 22, 1900.]

First prizes—6:

Collections of apples, crops of 1899-1900—

Division of Pomology, United States Department of Agriculture: Crop of 1899, 24 varieties, 13 States; crop of 1900, 19 varieties, 2 States.

New York State commission: Crop of 1899, 6 varieties; crop of 1900, 3 varieties.

Collections of apples, crop of 1899—

Illinois State Horticultural Society: 5 varieties.

Missouri State Horticultural Society: 4 varieties.

C. B. Wood, Washington, Va.: 2 varieties.

Collections of apples, crop of 1900—

Farmers' Produce Association of Delaware: 24 varieties.

Second prizes—3:

Collection of apples, crop of 1899—

Joseph Husband, Leanderville, Ill.: 2 varieties.

Collection of apples and pears, crop of 1900—

Peninsula Horticultural Society: Apples, 5 varieties; pears, 1 variety.

Collection of apples and peaches, crop of 1900—

Charles Wright, Seaford, Del.: Apples, 1 variety; peaches, 6 varieties.

Third prize—

Collection of apples, crop of 1899—

A. Nelson, Lebanon, Mo.: 1 variety.

[Temporary competition September 12, 1900.]

First prizes—6:

Collection of apples, crops of 1899-1900; crab apples and pears, crop of 1900—

Division of Pomology, United States Department of Agriculture: Apples, crop of 1899, 17 varieties, 8 States; crop of 1900, 50 varieties, 4 States.

Crab apples, crop of 1900, 1 variety, 1 State.

Collection of apples, crops of 1899-1900—

Illinois State Horticultural Society: Crop of 1899, 2 varieties; crop of 1900, 20 varieties.

Collection of apples, crops of 1899-1900; crab apples and pears, crop of 1900—

New York State commission: Apples, crop of 1899, 4 varieties; crop of 1900, 13 varieties. Crab apples, crop of 1900, 1 variety. Pears, crop of 1900, 2 varieties.

Collection of apples, crop of 1899—

Missouri State Horticultural Society: 5 varieties.

First prizes—Continued.

Collection of apples, crop of 1900—

Howard A. Chase, Mount Pocono, Pa.: 26 varieties.

Collection of apples, crab apples, and pears, crop of 1900—

J. Elmer Bradley, Lyons, N. Y.: Apples, 2 varieties; crab apples, 1 variety; pears, 1 variety.

Second prizes—7:

Collection of apples, crop of 1900:

F. D. Voris, Neoga, Ill.: 10 varieties.

Exhibits of oranges:

Arlington Fruit Company, Riverside, Cal.: 1 variety.

Riverside Orange Company, Riverside, Cal.: 1 variety.

Charles E. Maud, Riverside, Cal.: 1 variety.

Phil M. Baier, Portersville, Cal.: 1 variety.

George Frost, Portersville, Cal.: 1 variety.

Henry E. Fuller, Redlands, Cal.: 1 variety.

Class 45.—Fruit trees and fruits.

[Temporary competition September 26, 1900.]

First prizes—9:

Collections of apples, crops of 1899–1900; pears and plums, crop of 1900—

Division of Pomology, United States Department of Agriculture: Apples, crop of 1899, 8 varieties, 4 States; crop of 1900, 124 varieties, 7 States.

Pears, crop of 1900, 5 varieties, 2 States. Plums, crop of 1900, 33 varieties, 1 State.

New York State commission: Apples, crop of 1899, 2 varieties; crop of 1900, 16 varieties. Pears, crop of 1900, 5 varieties. Plums, crop of 1900. 1 variety.

Collection of apples and pears, crop of 1900—

Kansas State Horticultural Society: Apples, 16 varieties. Pears, 2 varieties.

Collections of apples, crops of 1899–1900—

Illinois State Horticultural Society: Crop of 1899, 6 varieties; crop of 1900, 19 varieties.

Missouri State Horticultural Society: Crop of 1899, 4 varieties; crop of 1900, 2 varieties.

Collections of apples, crop of 1900—

New York Agricultural Experiment Station, Geneva, N. Y.: 65 varieties.

E. F. Babcock, Waitsburg, Wash.: 55 varieties.

Collection of pears, crop of 1900—

Ellwanger & Barry, Rochester, N. Y.: 117 varieties.

Collection of plums, crop of 1900—

New York agricultural experiment station, Geneva, N. Y.: 55 varieties.

Second prizes—6:

Collection of apples and pears, crop of 1900—

Peninsula Horticultural Society: Apples, 12 varieties; pears, 5 varieties.

Collections of apples, crop of 1900—

Farmers' Produce Association of Delaware: 36 varieties.

Fred Shaw, Summerhill, Ill.: 5 varieties.

Delos Tenny, Hilton, N. Y.: 12 varieties.

Exhibit of oranges, crop of 1899–1900—

Arlington Heights Fruit Company, Riverside, Cal.

Collection of peaches, crop of 1900—

Charles Wright, Seaford, Del.: 8 varieties.

[Temporary competition October 10, 1900.]

First prizes—8:

Collection of apples, crops of 1899–1900; pears and plums, crop of 1900—

Division of Pomology, United States Department of Agriculture: Apples, crop of 1899, 6 varieties, 6 States; crop of 1900, 86 varieties, 12 States. Pears, crop of 1900, 24 varieties, 2 States. Plums, crop of 1900, 3 varieties, 1 State.

Collection of apples, pears, and plums, crop of 1900—

New York State commission: Apples, 45 varieties; pears, 9 varieties; plums, 3 varieties.

Collection of apples, crab apples, and pears, crop of 1900—

Michigan Agricultural College Experiment Station: Apples, 52 varieties; crab apples, 8 varieties; pears, 26 varieties.

Collections of apples, crops of 1899–1900—

Illinois State Horticultural Society: Crop of 1899, 3 varieties; crop of 1900, 17 varieties.

Missouri State Horticultural Society: Crop of 1899, 3 varieties; crop of 1900, 14 varieties.

Collections of apples, crop of 1900—

Iowa State Horticultural Society: 11 varieties.

Kansas State Horticultural Society: 22 varieties.

W. G. Vincenheller, pomologist, Arkansas agricultural experiment stations: 12 varieties.

Second prizes—13:

Collection of apples, peaches, and plums, crop of 1900—

C. S. Fosselman, Weiser, Idaho: Apples, 8 varieties; peaches, 2 varieties; pears, 2 varieties.

Collections of apples and pears, crop of 1900—

Charles P. Hartley,¹ Caldwell, Idaho: Apples, 6 varieties; pears, 1 variety.

S. L. Lupton, Winchester, Va.: Apples, 3 varieties; pears, 1 variety.

Joe A. Burton, Orleans Ind.: Apples, 7 varieties; pears, 1 variety.

Collection of apples and plums, crop of 1900—

I. B. Perrine, Blue Lakes, Idaho: Apples, 3 varieties; plums, 1 variety.

Collections of apples, crop of 1899–1900—

H. M. Dunlap, Savoy, Ill.: Crop of 1899, 2 varieties; crop of 1900, 11 varieties.

Ozark Orchard Company,¹ Goodman, Mo.: Crop of 1899, 2 varieties; crop of 1900, 10 varieties.

Collections of apples, crop of 1900—

George E. Murrell, Fontella, Va.: 5 varieties.

Ohio State Horticultural Society: 12 varieties.

North Carolina department of agriculture: 14 varieties.

Idaho State Horticultural Society: 7 varieties.

Virginia State Horticultural Society: 6 varieties.

Collection of pears, crop of 1900—

David K. Bell, West Brighton, N. Y.: 8 varieties.

[Temporary competition October 24, 1900.]

First prizes—14:

Collection of apples, crops of 1899–1900; pears, crop of 1900—

Division of Pomology, United States Department of Agriculture.

Collections of apples, crops of 1899 and 1900—

Illinois State Horticultural Society.

Missouri State Horticultural Society.

New York State commission.

¹Omitted from "Liste des Recompenses" received in Washington May 28, 1901. This was apparently unintentional, as the medal equivalents of these "prizes" are correctly published in the "Liste."

First prizes—Continued.

Collections of apples, crop of 1900—

- Idaho State Horticultural Society: 7 varieties.
 Iowa State Horticultural Society: 10 varieties.
 Kansas State Horticultural Society: 13 varieties.
 Michigan Agricultural College experiment station: 40 varieties.
 E. F. Babcock, Waitsburg, Wash.: 55 varieties.
 H. M. Dunlap, Savoy, Ill.: 10 varieties.
 Ozark Orchard Company, Goodman, Mo.: 10 varieties.
 I. B. Perrine, Blue Lakes, Idaho: 3 varieties.
 W. G. Vincenheller, Fayetteville, Ark.: 12 varieties.
 L. M. Blakely,¹ Lyons, N. Y.: 1 variety.

Second prizes—8:

Collection of apples, crop of 1900—

- North Carolina department of agriculture: 11 varieties.
 Ohio State Horticultural Society: 13 varieties.
 Virginia State Horticultural Society: 6 varieties.
 Joe A. Burton, Orleans, Ind.: 7 varieties.
 Howard A. Chase, Mount Pocono, Pa.: 4 varieties.
 C. P. Hartley, Caldwell, Idaho: 6 varieties.
 S. L. Lupton, Winchester, Va.: 3 varieties.
 George E. Murrell, Fontella, Va.: 5 varieties.

Third prizes—2:

Collection of apples, crop of 1900—

- Edgar Wilson, Boise, Idaho: 2 varieties.

Collection of pears, crop of 1900—

- David K. Bell, West Brighton, N. Y.: 5 varieties.

RECAPITULATION BY COMPETITIONS.

	Prizes.				
	First.	Second.	Third.	Honorable mention.	Totals.
<i>Class 45.—Fruit trees and fruits.</i>					
Temporary competition—					
May 9, 1900	4	3	4		11
May 23, 1900	4	8	1	10	23
June 13, 1900	7	7	2		16
June 27, 1900	8	4	3		15
July 18, 1900	7	3	3		13
August 8, 1900	6	3			9
August 22, 1900	6	3	1		10
September 12, 1900	6	7			13
September 26, 1900	9	6			15
October 10, 1900	8	13			21
October 24, 1900	14	8	2		24
Total	79	65	16	10	170
<i>Class 46.—Ornamental trees, shrubs, plants, and flowers.</i>					
Temporary competition June 13, 1900, W. Atlee Burpee & Co., Philadelphia, Pa	1				
Grand total	80	65	16	10	171

¹Omitted from "Liste des Recompenses" received in Washington May 28, 1901. This was apparently an unintentional omission, as the medal equivalent of this "prize" is correctly published in the "Liste."

RECAPITULATION BY STATES.

States.	Prizes.				
	First.	Second.	Third.	Honorable mention.	Total.
<i>Class 45.—Fruit trees and fruits.</i>					
United States (Division of Pomology, Department of Agriculture)	11				11
Arkansas	2				2
California	5	7			12
Connecticut		4			4
Delaware	1	5			6
Idaho	2	6	3		11
Illinois	15	4		4	23
Indiana		7		1	8
Iowa	2				2
Kansas	3		2		5
Maine		1			1
Michigan	2		1		3
Missouri	12	1	1		14
Nebraska	2	7		2	11
New Mexico		1	1		2
New York	17	2	1	1	21
North Carolina		7	1	1	9
Ohio		2			2
Pennsylvania		1	3		5
Virginia	2	8	2		12
Washington	2	1	1		4
West Virginia		1		1	2
Total	79	65	16	10	170
<i>Class 46.—Ornamental trees, shrubs, plants, and flowers.</i>					
Pennsylvania	1				
Grand total	80	65	16	10	171

APPENDIX E.

LIST OF MEDAL EQUIVALENTS OF AWARDS TO EXHIBITORS OF FRESH FRUITS AND NUTS IN TEMPORARY COMPETITIONS IN GROUP VIII.

Class 45.—Fruit trees and fruits.

Grand prizes—6:

Division of Pomology, United States Department of Agriculture.
 California State commission to Paris Exposition.
 Illinois State Horticultural Society.
 Missouri State Horticultural Society.
 New York State commission to Paris Exposition.
 North Carolina department of agriculture.

Gold medals—16:

Idaho State Horticultural Society.
 Indiana Horticultural Society.
 Iowa State Horticultural Society.
 Kansas State Horticultural Society.
 Michigan Agricultural College Experiment Station.
 Nebraska State Horticultural Society.
 New York Agricultural Experiment Station.
 Ohio State Horticultural Society.
 Virginia State Horticultural Society.
 E. F. Babcock, Waitsburg, Wash.
 L. M. Blakely, Lyons, N. Y.
 H. M. Dunlap, Savoy, Ill.
 Ellwanger & Barry, Rochester, N. Y.

Gold medals—Continued.

Ozark Orchard Company, Goodman, Mo.
I. B. Perrine, Bluelakes, Idaho.
W. G. Vincenheller, Fayetteville, Ark.

Silver medals on fruits—24:

Connecticut Pomological Society.
Farmers' Produce Association of Delaware.
Maine State Pomological Society.
New Mexico College of Agriculture.
Peninsula Horticultural Society.
West Virginia State Horticultural Society.
Arlington Heights Fruit Company, Riverside, Cal.
H. A. Aldrich, Neoga, Ill.
David K. Bell, West Brighton, N. Y.
Joe A. Burton, Orleans, Ind.
Howard A. Chase, Mount Pocono, Pa.
Moses H. Cone, Blowing Rock, N. C.
C. S. Fosselman, Weiser, Idaho.
P. Gleason, Leroy, N. Y.
Joseph Husband, Leanderville, Ill.
S. L. Lupton, Winchester, Va.
George E. Murrell, Fontella, Va.
A. Nelson, Lebanon, Mo.
Thomas T. Newby, Carthage, Ind.
Fred Shaw, Summerhill, Ill.
C. G. Winn, Griggsville, Ill.
C. B. Wood, Washington, Va.
Charles Wright, Seaford, Del.
W. A. Young, Butler, Ill.

Silver medals on nuts—4:

Herbert Post, Fort Worth, Tex.
Stuart Pecan Company, Ocean Springs, Miss.
Woldert Grocery Company, Tyler, Tex.
B. M. Young, Morgan City, La.

Bronze medals on fruits—18:

Philip M. Baier, Portersville, Cal.
J. Elmer Bradley, Lyons, N. Y.
George Frost, Portersville, Cal.
H. E. Fuller, Riverside, Cal.
W. R. Harris, Tecumseh, Nebr.
Charles P. Hartley, Caldwell, Idaho.
Gabriel Hiester, Harrisburg, Pa.
Elbert Manchester, Bristol, Conn.
Chas. E. Maud, Riverside, Cal.
O. R. Pierce, Hudson, Mich.
Walter S. Ratliff, Richmond, Ind.
Riverside Orange Company, Riverside, Cal.
E. F. Stephens, Crete, Nebr.
Delos Tenny, Hilton, N. Y.
F. D. Voris, Neoga, Ill.
E. C. Warner, New Haven, Conn.
Prescott Williams, Williamsburg, Mass.
Edgar Wilson, Boise, Idaho.

Bronze medal on nuts—1:

A. G. Delmas, Scranton, Miss.

Honorable mention—7:

Chas. Brown's Sons, Arroyo, W. Va.

James Dickie, Massies Mills, Va.

Marshall Brothers, Arlington, Nebr.

J. O. Parker, Lakin, Kans.

Joseph Patchett, Billsboro, N. Y.

Peder Pedersen, Huntingdon Valley, Pa.

A. I. Weidner, Arendtsville, Pa.

Class 46.—Ornamental trees, shrubs, plants, and flowers.

Bronze medal—1:

W. Atlee Burpee & Co., Philadelphia, Pa.

RECAPITULATION OF MEDAL AWARDS IN TEMPORARY COMPETITIONS IN GROUP VIII.

Grand prizes	6
Gold medals	16
Silver medals	28
Bronze medals	20
Honorable mention	7
Total	77

AWARDS TO COLLABORATORS.

Class 45.—Fruit trees and fruits.

Gold medals—7:

L. R. Bryant, Princeton, Ill.

Wesley Greene, Des Moines, Iowa.

W. G. Johnson, College Park, Md.

E. R. Lake, Corvallis, Oreg.

W. M. Munson, Orono, Me.

Geo. C. Richardson, Leavenworth, Kans.

James Troop, Lafayette, Ind.

Silver medals—10:

Wm. H. Barnes, Topeka, Kans.

Geo. E. Boggs, Livingston, N. C.

L. C. Corbett, Morgantown, W. Va.

W. W. Farnsworth, Waterville, Ohio.

H. O. Franklin, New Orleans, La.

Frank O. Harrington, York Center, Iowa.

Frank Holsinger, Rosedale, Kans.

L. B. Pierce, Tallmadge, Ohio.

Elmer Reeves, Waverly, Iowa.

S. G. Soverhill, Tiskilwa, Ill.

Bronze medals—12:

William P. Corsa, Division of Pomology, Department of Agriculture, Washington, D. C.

D. R. Edwards, Versailles, Mo.

W. G. Gano, Parkville, Mo.

William N. Irwin, Division of Pomology, Department of Agriculture, Washington, D. C.

T. E. Malone, Wilson, Mo.

Bronze medals—Continued.

Robert Manning, Salem, Mass.

William Mitchem, Argentine, Kans.

C. L. McPeeters, Baldcreek, N. C.

W. H. Pillow, Reeds Corners, N. Y.

W. H. Ragan, Greencastle, Ind.

A. Rich, Rhea, Ark.

C. L. Watrous, Des Moines, Iowa.

RECAPITULATION OF AWARDS ON PERMANENT AND TEMPORARY EXHIBITS IN GROUP
VIII—HORTICULTURE AND ARBORICULTURE.

	Grand prizes.	Gold medals.	Silver medals.	Bronze medals.	Honorable mention.	Total.
Class 43		3	17	7	6	33
Class 45:						
Permanent exhibits	1	1				2
Temporary exhibits	6	16	28	19	7	76
Collaborators		7	10	12		29
Class 46, temporary exhibits				1		1
Class 48			1		1	2
Total	7	27	56	39	14	143

INDEX.

	Page.
Aeronautics, report of delegate to congress	346-349
Agricultural experiment stations, congress of	18
Agricultural syndicates (mutual benefit), congress of	18-19
Alpinism, report of delegate to congress	337-342
Americanists, report of delegate to congress	20-43
Arboriculture and pomology, report of delegate to congress	15-17
Archæology and prehistoric anthropology, report of delegate to congress	43-53
Architects, report of delegate to congress of	53-57
Basque studies, congress of	57-58
Bee culture, report of delegate to congress	58-63
Bibliography, congress of	63
Blind, congress for amelioration of the condition of	64
Botany, report of delegate to congress	64-69
Building materials, congress on methods of testing, report of delegate	70-83
Buildings, congress on ownership of	69
Charities, public and private, report of delegate to congress	83-90
Chemistry (applied), report of delegate to congress	90-99
Chronometry, report of delegate to congress	99-101
Colonial congress, report of delegate	101-105
Colonial sociology, report of delegate to congress	105-112
Commercial travelers, congress of	113
Congresses, international:	
Delegates, reports of	15-352
List of, with names and addresses of secretaries	8-9
Regulations for	9-12
Report of director of organization	5-13
Reports of delegates	15-352
Cooperative alliance (international), congress of	19-20
Copyright congress, report of delegate to	113-125
Customs congress	125-126
Deaf-mute congress, report of delegate to	126-136
Dental congress, report of delegate to	136-140
Dermatology and syphilography, report of delegate to congress	140-141
Drawing, report of delegate to congress of instruction in	141-149
Education (elementary), report of delegate to congress	149-151
Education (higher), report of delegate to congress	171-174
Education (popular), congress of	174
Education (primary), report of delegates to congress	151-155, 156-158
Education (secondary), report of delegate to congress	158-171
Education (social), congress of	174-177
Educational press, congress of	177
Electro-therapeutics, report of delegate to congress	178-179

	Page.
Fencing, congress of	179
Fine arts, congress of	179-182
Folklore, congress of	182-183
Forestry, congress of	183-184
Fruits (beverage-yielding), congress of	63
Gas congress, report of delegate	184-194
Geography, economic and commercial, report of delegate to congress	194-197
Geologists, report of delegate to congress of	198-204
Gold and silver standards, unification of, report of delegate to congress	295-299
Graphology, congress of	204-205
Grocery congress	205
History, comparative, report of delegate to congress	205-208
Homeopathy, congress of	212
Hygiene, report of delegate to congress	212-216
Hypnotism, report of delegate to congress	216
Insurance, social, and accidents to labor, report of delegate to congress	319-324
Labor, legal protection of, report of delegate to congress	324-329
Law, maritime, congress of	217-218
Letter sent to proposed delegates	13
Librarians, report of delegate to congress of	218-225
Life-saving and first aid to the injured, congress of	226
Maritime law, congress of	217-218
Marine, merchant, report of delegate to congress	237-242
Mathematics, report of delegate to congress	226-234
Mechanics, applied, congress of	234-235
Medical press, report of delegate to congress	236-237
Medicine, professional, and medical deontology, report of delegate to congress	236
Medicine, report of delegate to congress	235-236
Merchant marine, report of delegate to congress	237-242
Meteorology, report of delegate to congress of	349-352
Millers and milling, congress of	242-243
Music, congress of	243
Naval architecture, congress of	57
Navigation, report of delegate to congress	243-255
Numismatics:	
Congress of	256-257
Report of delegate to congress	335-337
Ornithological congress	257-258
Peace congress	258-259
Philosophy, congress of	259-262
Photography, congress of	263
Prisoners' aid societies, congress of	263
Psychology, report of delegate to congress	264-266
Railway congress, report of delegate	266-281
Ramie-defibrating machines, report of delegate to congress	343-346
Regulations for congresses	9-12
Religions, history of, report of delegate to congress	208-212
Reports of delegates from the United States to the international congresses	15-352
Schools (commercial), congress on	112
Steam apparatus, supervision and safety of, congress of	281
Stock (joint) companies, congress of	217
Sunday-rest congress, report of delegate to	281-286

	Page.
Theatrical art, congress of.....	286
Thread numbering, congress of.....	286-289
Tobacco congress.....	289-290
Tramways, report of delegate to congress	290-294
Vegetarian congress	300
Viticulture, report of delegate to congress.....	300-303
Wines and liquors, report of delegate to congress.....	304-306
Wine, spirits, and liquors, commerce, congress of.....	306
Woman's works and institutions, report of delegate to congress.....	306-314
Women, patronage of young working women, housing, etc., report of delegate to congress.....	316-319
Workingmen's association of production, congress of.....	315
Workingmen's houses, report of delegate to congress.....	330-335
Workmen, legal protection of, congress of.....	314-315

APPENDIX III.

INDEX TO VOLUME I.

	Page.
Admission price.....	76
Admissions, total numbered registered, paid	76
Admission tickets:	
Number sold.....	76
Extra number on special days.....	76
Affairs, department of, report of director	353-388
Agent, disbursing, report	137-160
Agriculture, department of, receipts and expenses, collective exhibits.....	328-329
Ambassador (United States) to France:	
Services of.....	78
Thanks to	78
Appropriations.....	359
Of States	42
National, need of increase	83-84
Statement to Congressional subcommittee	84-86
Additional statement to Congress.....	86-88
Act of Congress approved March 3, 1899.....	89
Increase by act approved February 9, 1900	89
Acts of Congress providing therefor.....	140-141
Lessened by specific legislation.....	144
Architect:	
Report	195
Contents, table of	199
Letter transmitting report	197
French associate, appointment	200
Labors in Paris.....	201
Assistant commissioner-general:	
Appointment of	25
Report of	115-136
Letter transmitting report to Commissioner-General	117
Representing the Commissioner-General	120
Attendance:	
Total at Exposition.....	75
Largest day's, at Exposition.....	76
Awards:	
Appeals therefrom.....	131
Cuban, list thereof	270-272
Baseball	236
Bicycle races.....	235
Bond of trustee	320
Buildings:	
Constructed by exhibitors, approximate cost of.....	159
Dates on which sites were transmitted for.....	127-128

Buildings—Continued.	Page.
Exposition, arrangement of	78
Insurance thereon	128
Number constructed by the United States	159
Cost and how paid for	159
Special	55
Publishers' building, agricultural annex, merchant marine, weather bureau building, architectural features	207-208
Bids for construction	128
Agricultural annex, Champ de Mars	55, 159
Agricultural machinery building, Bois de Vincennes	55
Bicycle pavilion, Bois de Vincennes	55
Machinery annex, Bois de Vincennes	55
Publishers' building, Esplanade des Invalides	56, 121, 159
United States National Pavilion—	
Decorating, painting, and furnishing	204-207
Decoration, subscriptions to expense	203
Constructions, contracts, and payments, accounts	157, 158
Description of interior arrangement	218
Design	199-207
Furnishing and decorating	157
Furnishing and decorating, appointment of commission on	202
Location, etc	58-60
Mural paintings, artists	203
Obstructions to effectiveness	124
Receipts	157, 158
Report of custodian	215-221
Salvage thereon, cost	158, 159
Cable, reduction in rates	121
Catalogue of United States exhibitors:	
Description of	48, 49
Arrangement and compilation of	309
Entries, instructions to exhibitors as to forms	312, 313
Imperative demand for delivery of United States cataloguing to French Exposition authorities	308
Number of copies printed	310
Privileges, instructions to exhibitors regarding	306
Publication of	305
Propositions to print	361-364
Sale of	305
Supplement or annex volume, sale thereof	305
Catalogues of foreign nations distributed in the United States	132
Celebration, July 4, 1900	67
Ceremonies; visits to United States sections by President of French Republic, dates thereof	132
Championship events, records	229
Checks, official, forms	320-323
Chicago offices of the commission	357
Civil engineering and transportation, department of, receipts, statements, and expenses	329
Claims, may have to be paid	160
Closing on Sunday	60-62
Collections	323

Commissioner-General:	Page.
Address, 4th of July.....	178
Appendixes to Commissioner-General's narrative.....	91-113
Appointment of Ferdinand W. Peck as	24
Conclusion of Commissioner-General's narrative.....	69, 70
Contents of narrative	27
Letter transmitting report to Commissioner-General	9
Letter of Commissioner-General transmitting report to President McKinley	7
Letter of President McKinley transmitting report to Congress	5
Narrative	27
Staff, names of	33
Visit to Paris.....	30
Visit to Paris with staff	45
Commissioners, United States:	
Appointment to serve during year 1900	26
Presented to President of France	133
Delegated by States, names thereof	133, 135
Commissioners, foreign:	
Organization	135
List of	97-113
Commissioner, Hawaiian, report of.....	272-274
Commissions, State.....	42
Concessions, sale of, at Exposition.....	360
Consul-general, United States, services rendered by	79
Contracts, forms of official	320-323
Contributions, amounts thereof	157
Cooperation of commercial and industrial organizations.....	38
Corn kitchen.....	56
Cuba	249
Report on	245-286
Contents, table.....	249
Letter transmitting report	247
Statistics.....	122
Customs:	
Report on	331-352
Directions	43
Duties	348, 349
Formalities, etc	151-153
Regulations, general, for exhibitors, blank forms, etc	335-348
Letter transmitting report.....	333
Decorations:	
List of persons receiving	71, 72
Other, for citizens of the United States.....	72
Depository for funds.....	320
Directors of United States exhibit departments.....	33
Disbursing agent:	
Report	137-160
Appendix to report.....	161-166
Disbursements	142-144, 324
Editor and statistician:	
Report	301-313
Letter transmitting report.....	303

	Page.
Embassy's corps of assistants, aid rendered by Secretary Vignaud.....	79
Esculap, American	121
Estimates.....	323, 359
Exhibitors:	
Expenses of, method of collecting and expending the funds thereof.....	90-96
Number of United States exhibitors at the Exposition.....	310
Exhibits:	
Areas for	35
Different groups of	53
Arrangement of groups	52
Authority to receive.....	146
Collecting, shipping, and installing.....	34
Collective.....	360
Necessity of.....	36
Agriculture, receipts, expenses.....	328, 329
Shipment of.....	44
Commercial exhibits, consignment of.....	43
Confusion confronting installation of	48
Cuban:	
Catalogue of	250-270
Awards given to.....	270-272
Custody of exhibits, and report thereon, while on board U. S. S. Prairie.	161-166
Declaration of.....	351
Demands of admission for.....	129, 130
Discharging at Havre and Rouen.....	130, 131
Discharging at Havre, contract for handling.....	148-150
Government exhibits, shipping instructions regarding.....	147
Government and individual, shipment of.....	46
Government, number of cases and tonnage, return to United States.....	153
Groups of exhibits as allotted in departments.....	53
Hawaii:	
Report on	272-286
Exhibits of sugar and sugar industry.....	276
Installation and decorations.....	51
Instructions relative to.....	151-153
Landing of, in France, customs, railroad rates.....	268-270
Life-saving apparatus.....	58
Material, furniture, etc., disposition of.....	155-157
Number of cases carried by U. S. S. Prairie.....	148
Packing of.....	151-153
Passing of, through entry ports of France and forwarding to Paris.....	46, 47
Receipt of, in Exposition grounds	351
Regulations for shipping, receiving, handling, and reshipping.....	375-388
Reshipment of	352
Return of.....	68, 374
System of placing exhibits of similar nature in one group.....	77
Storage of empty cases.....	352
Shipping of	151-153
Spaces, table of.....	54
Transportation of—	
To Paris.....	43
By U. S. S. Prairie	146
Through city of Paris.....	350

Exhibits—Continued.	Page.
Transportation of—Continued.	
Under direction of exhibitor	351
Method of	365
Unloading and placing, and storing empty cases	370-372
Weight of, carried by U. S. S. Prairie	148
Expenditures:	
Lafayette Monument Commission	192, 193
Method of making, and responsibility connected therewith	145
Recapitulation of	330
Statement of	142, 143
Trustees'	325-328
Expense, items borne by exhibitors	317
Exploitation, report of director of	287-300
Letter transmitting report	289
Addresses to associations and others	292-294
Book of General Information, distribution of	294
Efforts of director of, establishment	295
Prosperity encountered in United States	298
State commissions and State appropriations	296
Success of the department	300
Exposition:	
Acts of Congress providing for participation of United States	21-23
Authorizing of, by President of France	11
Closing of	68
Interesting United States manufacturers in	291, 292
Invitation to the United States	12
Invitation transmitted by President Cleveland to Congress	13
Negotiations, original	29
Opening of	50, 51
Review of, brief	72-75
United States at, space occupied by	36
Fire-extinguishing competition	234
Finances	39
French cabinet officers and diplomatic corps	78
Functions, official and social	135
and concerts, names of participants, dates, etc	219, 220
Furniture, lumber, etc., salvage on	154
Furniture and material, purchase thereof	358
Golf	236
Guard:	
Captain's report	239-243
Increase of	242, 243
Members, list thereof	243
Organization	372
Pay of	372, 373
Quarters and subsistence of	241, 242
Selection, manner of	372, 373
Services, special, rendered by	242
Uniforms	242
Hawaii	245-286
Report thereon	272
Agricultural features of the islands	279, 280
Commerce	280, 281

Hawaii—Continued.	Page.
Exhibits, educational.....	282-286
Statistics on.....	122
Topography of the islands.....	275
Illustrations, key and titles thereto.....	27
Insurance.....	45
Amount of policy and rate.....	366-368
Invitation to the United States to the Exposition.....	12
Acceptance by Congress.....	14
Invoices, official, forms.....	320-323
Ireland, Archbishop John:	
Thanks extended to.....	79
Address on Fourth of July.....	184-192
July 4, 1900:	
Celebration of, in Paris.....	67
Lafayette monument dedication ceremonies, speeches, etc.....	176-192
Jurors and advisory counsel, appointment.....	172
Lafayette monument:	
Acceptance by France.....	170, 171
Commission, Report of.....	167-193
Contents of report, table.....	169
Dedication of.....	176
Expenditures.....	192, 193
History of (brief).....	63-66
Liabilities.....	192, 193
Location of monument.....	122
Organization and exploitation.....	169, 170
Poem, dedication ode.....	182-183
Secretary, address of, July 4, 1900.....	180-181
Space for.....	32
Lafayette souvenir dollar:	
Appropriation therefor.....	173
Presentation of, to President of France.....	173-175
Legion of Honor, United States citizens receiving.....	71, 72
Library and offices of United States Commission.....	357
Life-saving apparatus, exhibit of.....	58
Literature:	
Official, translations of.....	126
On Exposition, collecting, translating, and transmitting same to the United States.....	127
Loubet, M. Emile, President of France, address on occasion of dedication of Lafayette monument.....	179
Machinery and electricity, department of, receipts and expenses.....	325, 326
Manning, Mrs. Daniel, address on Fourth of July.....	181
Memorial presented to the French administration on applying for increased amount of space.....	81-83
Pollok, Anthony, memorial prize.....	123
Mining and metallurgy, department of, receipts and expenses.....	329
New York offices of the United States Commission.....	139, 357
Offices of the United States Commission:	
Chicago.....	357, 358
New York.....	139, 357, 358
Paris.....	115, 120, 121, 131, 357, 358
Organization.....	356
Of staff of Commissioner-General.....	33
Insufficient space at the Exposition.....	28

	Page.
Pamphlets, official.....	126
Paris offices of the Commission.....	115, 120, 121, 131, 357, 358
Passes:	
System of issuance.....	373-374
Number of persons admitted on.....	76
Porter, Ambassador Horace:	
Address, Fourth of July.....	177
Thanks to and services of.....	78
Porto Rico:	
Report on.....	245-286
Statistics.....	122
Postal station, United States:	
Report of Superintendent.....	209-213
Date of opening.....	211
Statement of receipts and business transacted.....	212, 213
Prairie, U. S. S.:	
Services.....	44
Date of sailing from Baltimore, arrival at Havre.....	148
Nature of cargo.....	151
Date of leaving Havre, arrival at New York.....	150
President McKinley:	
Expressions of appreciation of honor conferred by.....	79, 80
Letter transmitting report to Congress.....	5
Progress of work, obstacles to.....	37
Publications relative to Exposition, distributed in United States.....	133
Railroad terminal facilities in Paris.....	350
Receipts:	
Lafayette Monument.....	192, 193
Official, forms of.....	320-323
Recapitulation of.....	330
Trustee.....	325-328
Reports.....	324
Report of committee on final report.....	9
Retrospective exposition.....	55
Review of Exposition (brief).....	72-75
Salaries.....	356
Salvage in Paris.....	154
Salvage, total amount received, and disposition of.....	157
Sculptor and architect for Lafayette Monument, selection of.....	171
Appointment of.....	26
Secretary and disbursing agent:	
Report of.....	137-166
Appendix to.....	161-166
Secretary of State, extract of report to President.....	13
Shipping directions.....	43
Souvenir dollar (Lafayette), appropriation for.....	173
Space:	
Accessions in the main exhibit grounds, date of.....	125-126
Allotment, conditions of.....	119-120
Allotment (final) to the United States.....	36
Increase of, denied.....	31
United States Pavilion—	
Space occupied.....	36
Space for, and other important space concessions granted.....	32

Special Commissioner Cridler, Thomas W.:	Page.
Appointment of	30
Report of	20
Letter of President McKinley transmitting report to Congress	21
Special Commissioner Handy, Moses P.:	.
Appointment of	14, 30
Report of	14-18
Letter of President McKinley transmitting report to Congress	19
Sports and athletics	57
Report of director of	223-227
Expenses of department	237
Records of prize winners	229-232
Staff of Commissioner-General, names of	33
State commissions	42
Headquarters for, allotted in United States National Pavilion	206
State representation	41
States, aid afforded by	40
Statistician, report of	301-313
Telegraphic rates, reduction of	121
Trustee:	
Report of	315-330
Letter transmitting report	315
United States:	
Importance of, stated	31
Invitation to participate in Exposition	12
Space occupied by, at the Exposition	36
Varied industries department, receipts and expenses	326-328
Vincennes:	
Concession for United States annex at	125, 126
Suggested water and tram connections with	63
Vouchers, forms of official	320-323
Yachting races	232, 233

INDEX TO VOLUME II.

	Page.
Accidents, devices for preventing.....	414-416
Admissions, price and regulations	41-42
Advertising matter, taking to Paris.....	8
Architecture, classification of.....	53
Agriculture, classification of.....	62-64
Agriculture, Department of, circular letters sent to exhibitors.....	215-242
Agricultural unions, etc., classification of.....	387
Application for space, form of	124
Appropriations.....	19
Appropriation for fine arts	516
Architecture:	
American	558
Catalogue of exhibitors of	510-512
Foreign.....	567
Army and Navy, hygiene of, classification.....	94
Art:	
American, insufficiently appreciated by our collectors.....	512
Works of, foreign purchasers.....	514
Artists and architects, cooperation of	286
Artists, Western, circular sent to	536
Assistants in department of fine arts.....	516
Associations, cooperative:	
Classification of	386
Trade unions, classification.....	86-87
Awards:	
Diplomas, grade thereof.....	40-41
Jury organization	37-40
To exhibitors in department of education (with list of exhibitors)	367-376
To exhibitors, fine arts section	547-548
To exhibitors, social economy section.....	467-485
Blacks and whites, American.....	557
Bleaching and dyeing, etc., classification of	77
Book of general information for exhibitors.....	17-114
Book-publishing companies	356
Bronzes and works of art, classification of.....	85
Brushes, etc., classification.....	85
Buildings, Exposition, when completed.....	10
Building, McCormick pavilion	10
Buildings, United States, opening of.....	10
Cataloguing, data, how obtained	125
Catalogue, difficulties surrounding compilation	9
Charities, public	459-461
Circular letter about exhibit.....	157-169, 173-175
Classification of exhibits	91-92, 389

	Page.
Charities section, key to installation of	331
Chemical industries:	
Classification of	80-83
Department of, circular letters to exhibitors.....	182-194
Chemicals:	
Classification of	80-81
Circulars sent to manufacturers of	185-187
Child labor, classification of.....	386
Circulars:	
General information for exhibitors	124-153
General, issued to exhibitors.....	129
Sent to exhibitors—	
In department of agriculture	215-242
In department of civil engineering and transportation	206-215
By director of exploitation	267-269
In department of fine arts	517
In department of forestry and fisheries.....	242-250
In department of liberal arts and chemical industries	182-194
In department of machinery and electricity.....	194-206
In department of mining and metallurgy	250-267
In department of varied industries	270-279
Civil engineering:	
Classification of	59-62
Department of, circular letters sent to exhibitors	206-215
Class journals, circular letter sent to	190-193
Classification:	
Education (Group I, classes 1 to 6, inclusive)	339-340
Fine arts (Group II, classes 7 to 10, inclusive)	527-528
General (Groups I to XVIII and classes 1 to 121, inclusive).....	25, 51-94
Clocks and watches, classification.....	84
Clothing, industries connected with, classification of	80
Coins and medals, classification of.....	54
Collaborators	376
Collective exhibits, forms for	130-133
College exhibit, circular letter about.....	177, 178
College, The American	353-354
Colonization, classification of.....	92-93
Commercial Museum, Philadelphia.....	408
Concessions	42
Congresses:	
Educational	164-165
International, attendance upon.....	11
Contract for exhibitors	133
Cooperation and profit sharing	451-454
Cooperative stores, classification.....	83, 387
Cotton, etc., classification of.....	78
Custom-house instructions, reshipment of goods	139-141
Customs formalities and reshipment	149
Customs formalities:	
French	145-147
United States	147-148
Customs, general regulations	34-35
Cutlery, classification of	83

	Page.
Declaration of foreign exporter.....	151-152
Decorations:	
Amount allotted for	292
Chief of, appointment	8
Classification of	73-76
Conclusions	319-321
Contents of report	283
Progress of work	289
Report of department of	281-321
System adopted	287
Difficulties of decoration	295-296
Diplomas, how graded	40
Director in chief of exhibit departments:	
Report	5-16
Contents of	7
Report, appendix to	17-114, 115-279
Table of contents	17
Director of decorations, visit to Paris	283
Directors of exhibit departments, appointment	7
Drafting department, establishment of	8
Drawing	358-359
Dwellings, workmens', classification	88
Economic monographs	379-380, 454
Education	334
Agricultural, exhibitors in	375
Commercial, exhibitors in	375-376
Comments, general	364-367
Comparisons	364
Elementary, exhibitors in	367-371
Higher	351-353
Exhibitors in	372-375
Industrial, exhibitors in	375-376
Secondary, exhibitors in	371-372
Special, in fine arts, exhibitors in	375
Educational Association, National, reprint from proceedings of	154-160
Educational exhibit, circular on	160-165
Education and social economy:	
Report of department of	323-485
Contents, table of	325
Letter transmitting	327
Introduction	333
Circulars issued	154-179
Circular letters to exhibitors	154-179
Classification	51-52
Personnel of force	345-346
Preparation of material	344
Educational exhibits:	
Collection and installation of	392-395
Elementary	348-350
Miscellaneous	354-355
Secondary	348-350
Educational monographs	357-358

	Page.
Educational section, key to installation of.....	329-330
Electricity:	
Classification of	58-59
Department of, circular letters to exhibitors.....	194-206
Employment bureaus.....	451
Engravings, and blacks and whites, foreign	567
Engravings, etchings, and miniatures (American).....	558
Engravings and lithographs, catalogue of exhibitors of.....	505-508
Exhibit departments, appointment of director.....	7
Exhibits:	
Effect of rules and classification upon.....	14
Catalogue of.....	36-37
Circumstances surrounding preparation	14-15
Description of	395-396
Dismantling, circular of instruction	137-139
Disposition of	467
Distribution of	362-364
Educational.....	329-395
Fine arts, number of.....	519
Fine arts, return of.....	522
General classification of.....	51-94
How admitted	26-34
Installation of, difficulties attending same.....	11
Obstacle to sale of	15
Perfection of.....	35-36
Repacking of, circular of instruction	137-139
Reshipping, circular of instruction.....	137-139
Reshipment of, formalities	145-151
Instructions from custom-house	139-141
Shipped by the U. S. S. Prairie	347
Shipment of, instructions by French railway companies.....	142-145
Labels, shipping, style of	129
Special	355
Theory of.....	336
United States—	
Exposed to weather	10
Merit of	11
Weight shipped by U. S. S. Prairie.....	347
Exhibitors:	
Analysis of	367
Book of general information for	17-114
Changing list of, in catalogue	9-10
Commercial, list of, made public	9
List of, in elementary education.....	367-371
Number of, in department of education	343
Regulations for.....	117-123
In social economy section, with awards	467-485
Space occupied by, in department of education.....	343
Exploitation, department of, circular letters sent to all exhibitors	267-269
Absence of scientific material	13
Buildings	47-50
Close of	15-16
Contemporaneous and retrospective features	13

Exploitation, department of—Continued.

	Page.
French officials	20
Grounds	47-50
Opening exercises	10
Organization, apparent omission of	13-14
Organization of	12
Plan and scope	12
Façade:	
Agriculture	301-303
Education	300-301
Liberal arts	299-300
Machinery and electricity	303-304
Merchant marine	309
Mining and metallurgy	308
Textiles	307
Varied industries	304-307
Façades	346
Amount allotted for	292
Description of	299-315
Minor	311-315
Factory inspection service	409-414
Farming on small or large scale, classification of	87
Finances of the Exposition	46
Fine arts:	
Advisory board	517
American exhibit of, remarks on	559
Awards to exhibitors of all countries	549-550
Blanks sent to intending exhibitors	535
Catalogue	522
Catalogue of exhibitors	491-512
Circulars	180-181, 517
Circular No. 1	525-527
Circular No. 2	528-531
Circular No. 3	537
Circular No. 4	539-543
Classification	53, 527-528
Comparative numbers of exhibits from all nations	545
Department staff	544
Exhibit in 1889, French criticism of	513
Exhibit in 1900, French comment upon	513
Exhibitors, awards to	547-548
Exhibits, number of	519
Exhibits secured in England and France	522
Exhibits, shipment of	521
Foreign and American exhibits, critical review of	551-568
Illustrations of sections and exhibits, key to	491
Institutions, growth of, in the United States since 1889	513-514
Juries	544
Juries, lists of members of	546-547
Notice	534
Palaces, opening of	521
Palaces and contents	568
Report department of	487-568
Contents	489

Fine arts—Continued.	Page.
Report, Department of—Continued.	
Letter transmitting	512
Part II	551-568
Concluding observations	568
Section, keys to plans and installation of	490
Section, plans of	490
Weakness of figure subjects	556
Fireproofing for façades	293
Fisheries, department of, circular letters sent to exhibitors	242-250
Flag, United States, floating from Eiffel tower	298
Foodstuffs, classification of	67-69
Foreign displays, decoration of	315-317
Forestry and fisheries, classification of	66
Forestry, department of, circular letters sent to exhibitors	242-250
French regulations on fine arts, extracts of	533
Furniture, classification of	73-76
Garments, classification of	76
Glass and crystal, classification of	75
Hardware, etc., classification of	72
Headquarters in Chicago	290
Headquarters in New York	286
Heating, classification of	75
Horticulture and arboriculture, classification of	65-66
Hunting, classification of	66-67
Hygiene and sanitation of the Army and Navy, classification	94
Hygiene, classification of	90-91, 388-389
Hygiene exhibit	457-459
Circular letter regarding	167-169, 173-177
Key to installation	331
Illustrations, key and titles to, department of education and social economy ..	325
Industrial disputes, conciliation and arbitration of	446-449
Industries, diversified, classification of	83-86
Information:	
General, to exhibitors	124-153
Secured in Paris	284-286
Insane, care and treatment of	461-463
Installation	346
And decoration of United States galleries (fine arts)	520
And shipping	347
Confusion confronting same	10
Devices	390-392
Educational section, key to	329-330
Hygiene and charities section, key to	331
Social economy section, key to	330-331
Institutions for mental improvement of workmen, classification	88
Institutions, provident, classification of	89
Instruments of precision, classification of	54
Insurance:	
Application for	135-136
Fine arts	519
Policy, reference to	125-126
Workingmen's	428-441
Introduction to report on education and social economy	333
Inventions, how protected	126

	Page.
Invoice of returned American goods and declaration of foreign exporter....	151-152
Jewelry, classification of	84
Juries, in social economy	378
Jurors, department of, circulars issued.....	153-154
Jury:	
Duty performed by United States director.....	11
Fine arts—	
Arrangements in Paris.....	518
At Chicago (preliminary).....	517
Lists	531-533
Meetings, dates of.....	518
Organization of work	522-525
International, organization.....	11
Jury work	360-362
Labels, exhibit, style of	129
Labor, bureau of statistics of	396-403
Labor (child), classification of	86
Labor organizations	450
Laces, etc., classification of	79
Landscapes, American.....	552-553
Law of June 13, 1896, relative to Exposition.....	44-45
Leathers and skins, classification of.....	82
Legislation:	
Act of Congress authorizing appointments and organization	17-19
French	21-23
Letters, circular, sent to exhibitors by heads of departments.....	115-279
Liberal arts:	
Classification of	53-56
Department of, circular letters to exhibitors.....	182-194
Library Association, American	355
Lighting (not electrical), classification of	76
Limitations in department of education and social economy	337-339
Loan exhibits, insurance on.....	134
Machinery:	
Classification of	56-58
Department of, circular letters to exhibitors.....	194-206
Manual training.....	358-359
Manufacturers, general circulars sent to	187-189
Medicine and surgery and dentistry, classification of	55
Metallurgy, department of, circular letters sent to exhibitors	250-267
Military appliances, etc., classification of.....	93-94
Miniatures, circulars sent to painters of	535
Mining and metallurgy, classification of.....	69-73
Mining, department of, circular letters sent to exhibitors	250-267
Monographs on economics	454
Musée, Social of, Paris	403-405
Musical instruments, classification of.....	55
National Education Association:	
Advisory committee	335-336
Committees, names, etc.....	166-167
Navy, classification of	93-94
Negro exhibit.....	381, 408-409, 463-467
Octroi	141-142

	Page.
Painting:	
American.....	553
Australian and Hungarian.....	562
Belgian and Danish.....	564
Classification of.....	53
English and Scotch.....	564
Figure and genre (American).....	554-555
French.....	559-562
German.....	565
Italian, Spanish, and Portuguese.....	563
Japanese and Peruvian.....	566
Mural, and stained glass.....	515
Norwegian, Swedish, and Dutch.....	564
Russian and Finnish.....	563
Swiss.....	563
Various nations.....	562
Paintings, cartoons, illustrations, catalogue of exhibitors of.....	491-505
Paper, manufacture of, classification.....	81-82
Paris, visits to, by director in chief of exhibit departments.....	7, 9
Patents, French, information upon.....	126
People:	
Public and private movements for welfare of, classification.....	89
Public welfare of, classification of exhibits.....	388
Perfumery, classification of.....	82
Photography, classification of.....	54
Portraiture, American.....	554
Printed matter, for distribution at Exposition.....	8
Printers' supplies, manufacturers of, circulars issued to.....	182
Printed matter, removal of French duty thereon.....	8-9
Printing processes and machinery, classification of.....	53
Promotion, how conducted, see letters.....	117-279
Protection of workers, etc., classification.....	87
Protest to jury on fine arts.....	548
Provident institutions, classifications of exhibits.....	388
Publications, classification of.....	54
Publishers' building, circular letter describing.....	182-183
Publishing houses, circular letters sent to.....	183-185
Railways, French, instructions about shipping exhibits.....	142-145
Receipts sent to loan exhibitors.....	134-135
Regulations:	
For exhibitors.....	117-123
General.....	23-43
Miscellaneous.....	42-43
Reshipment of goods.....	149-151
Revenue, internal.....	141-142
Rubber (india), gutta-percha articles, classification of.....	85
Russia, proposed exhibit, correspondence relative thereto.....	127-128
Savings banks.....	442-446
School work at the Exposition.....	163
School work, written, circular letter about.....	170-172
Sculpture:	
American.....	556-557
And engravings upon medals and gems, list of exhibitors.....	508-510

Sculpture—Continued.	Page.
Circular sent to sculptors	538
Classification of	53
Foreign	567
French	566
Progress in	515
Shipping and installation	347
Silks, classification of	79
Silversmiths' and goldsmiths' wares, classification of	84
Social economy	377
Classification of	86-92
Classification of exhibits	386
Exhibits—	
Circular on	167-169
Circular letter about	173-175
Hygiene and public assistance, special report on	383-485
Report, conclusion	455-457
Report, criticism	455-457
Section, key to installation of	330-331
Special report on, letter transmitting	383
Social Service League of New York	405-407
Space:	
Allotments, how arranged	124-125
Applications for	8
Form of	124
Assignment of	341
Fine arts, location of	519
Inadequate for fine arts exhibit	515
Tentative allotments, when made	8
Specially solicited works of art	556
Stationery, classification of	83
Textiles, classification of	76-80
Theater, appliances, etc., classification of	56
Threads, etc., classification of	76
Tobacco and matches, classification of	83
Topography, classification of	54
Torpedoes, etc., classification of	93
Toys, classification of	86
Trade-marks, French, information upon	126
Transportation:	
Classification of	59-62
Department of, circular letters sent to exhibitors	206-215
Travelers' equipments, etc., classification of	85
Typewriting-machine manufacturers, circulars sent to	189-190
Typography, classification of	53
United States Pavilion, decoration of	317-319
University exhibits, materials constituting	351
Varied industries, department of, circulars sent to exhibitors	270-279
Ventilation, classification of	75
Wages, classification of	386
Wages, etc., classification	86
Wools, classification of	79

	Page.
Working classes, housing of.....	416-427
In France, list of associations.....	419
Workingmen's insurance	428-441
Workmen:	
Mental improvement of, classification of exhibits	387
Protection of, classification of exhibits	387
Workmen's dwellings, classification	387
Works of art, form of receipt given to owners	543

INDEX TO VOLUME III.

Administrative departments (Army and Navy):	Page.
Awards	253
Classification of	179
Exhibitors, list of	194
Aerial navigation, classification of	179
Agricultural:	
Annex, Champ de Mars, exhibits in	465
First floor	466
Second floor	475
Third floor	481
Implements, key to installation of	280
Industries, appliances, and methods—	
Classification of	268
Exhibitors, list of	283-284
Machinery—	
Description of	456-493
Exhibits	466-493
McCormick Building	486
Practice and experiment station, arrangement of exhibits	347
Products inedible—	
Classification of	269
Exhibitors, list of	302-310
Theory, statistics—	
Classification of	268-269
Exhibitors, list of	284-286
Agriculture, department of (Groups VII, VIII, and X):	
Allotment of space	356-360
Catalogue of exhibits and exhibitors	282-325
Classification of exhibits	268-271
Collective exhibit of cotton	425-431
Employees of departments, dates of service and salaries	325-328
Catalogue of	282-325
Exhibits—	
Arrangement of	342-347
Assembling and preparation of	360-367
Catalogue of	282-325
Classification of	268-271
Description of	373-446
Installation of	367-373
Installation, key to	271-282
Superintendent, report of	365-367

Agriculture, department of, Groups VII, VIII, and X—Continued.	Page.
Experiment stations, collective exhibit of.....	434-438
Report of expert	435-438
Experts, collection of exhibits by.....	329-330
Exploitation	348-356
Illustrations, key and titles to	267-268
Installation of exhibits	367-373
Installation of exhibits, key to	271-282
Preliminary work	338-341
Report, department of	265
Contents of report	267
Introduction	333-338
Letter transmitting report.....	329-331
Staff of department, dates of service, and salaries received.....	325-328
Status of, in the United States, with statistics, etc.....	334-338
Army and Navy (Group XVIII):	
Classification of exhibits	179-180
Exhibitors, list of	192-194
Hygiene and sanitation, classification of	180
List of exhibits.....	250-263
Report, department of	175-263
Arctic exploration, exhibit of publications	251
Artillery:	
Award.....	253
Classification of	179
Exhibitors, list of	192
Exhibits, list of	250
Automobiles	227-229
Awards to exhibitors, civil engineering and transportation, army and navy....	203
Awards to exhibitors of machinery and electricity.....	141
Awards to collaborators, liberal arts and chemical industries	43-44
Bakery products, arrangement of exhibits	344
Bee keeping and entomology, key to installation of exhibits.....	274
Beverages, various:	
Classification of	271
Exhibitors, list of	324-325
Bicycles	227-229
Binding twine exhibits	431-433
Books, newspapers, etc.:	
Awards, list of	41
Awards, table of	51
Classification of	8
Collaborators, awards to	44
Description of exhibits.....	56-62
Exhibitors in	17-29
Jury, members of	36
Boston, metropolitan district, exhibit of.....	224-227
Bread and pastry:	
Classification of	270
Exhibitors, list of	319
Building for United States machinery, special, at Bois de Vincennes	125
Buildings, steel-frame method of constructing	212-217
Canals, dockyards, etc., exhibits of publications	251

Carriages, automobiles, cycles, etc:	Page.
Classification of	178
Exhibitors, list of	183-185
Description of exhibits	227-229
Cartography, hydrography, etc.:	
Awards	253-263
Classification of	179
Exhibitors, list of	193-194
Cereals:	
Arrangement of exhibits	343-344
Foods, key to installation of exhibits	274
Product court	392-395
Products from maize, arrangement of exhibits	344
Products, other than from maize, arrangement of exhibits	344
Chemical industries (Group XIV):	
Awards	42-43, 44
Classification of	9-11
Collaborators, awards to	44
Description of exhibits	76-83
Exhibitors:	
Awards to	42-43
List of	32-35
Façade	77
Installation, key to	75
Liquid air	82-83
Chemical and pharmaceutical arts:	
Awards, list of	42
Awards, table of	51
Classification of	9
Collaborators, awards to	44
Exhibitors in	32-33
Jury, members of	37-38
Civil engineering and transportation, department of (Groups VI and XVIII):	
Awards to exhibitors	203
Catalogue of exhibitors	180-194
Classification of exhibits	177-180
Director's narrative	199-263
Exhibitors, catalogue of	180-194
Exhibits—	
Classification of	177-180
Description of	204-253
Installation of	202-203
List of	253-263
Illustrations, key and titles to	194-195
Installation, key to	195-198
Narrative of director	199-263
Organization of the department	199-200
Report, department of	175-263
Contents of report	177
Space—	
Allotments of	201
Areas of	200
Occupied by exhibitors, key to	195-198
Staff of department	175

Civil engineering, materials, etc.:	Page.
Classification of	177
Exhibitors, list of	180-181
Description of	204-227
Chicago Drainage Canal, model of	205-208
Collective exhibit of United States newspapers, class journals, etc., list of contributors	58-62
Corn kitchen	395-398
Cotton, collective exhibit of	425-431
Dairy exhibits	377-384
Dairy products, arrangement of exhibits	342
Electric lighting:	
Classification of	104
Exhibitors, list of	113-114
Exhibits, description of	161
Electricity (Group V):	
Applications of, various—	
Classification of	104
Exhibitors, list of	115-116
Exhibits, description of	163
Catalogue of exhibitors	111-116
Classification of	104
Collective exhibit	133-134
Exhibit	132
Exhibitors, catalogue of	111-116
Exhibits, description of	159-163
Lighting the United States pavilion and exhibit sections	140
Machines for generating and using—	
Classification of	104
Exhibitors, list of	111-113
Exhibits, description of	159-160
Telegraphy and Telephony	104, 114-115
Electro-chemistry:	
Classification of	104
Exhibitors, list of	113
Entomology, report on	385-388
Farinaceous products and their derivatives:	
Classification of	270
Exhibitors, list of	319
Farm equipment and methods of improving land:	
Classification of	268
Exhibitors, list of	282-283
Fertilizer court	409-410
Exhibits, arrangement of	347
Exhibits, key to installation	279
Fiber court	419-433
Key to installation of	279-280
Fish food:	
Court exhibits	375-376
Installation, key to	271-272
Fodder plants for animals, arrangement of exhibits	345
Foods, equipment and methods employed in their preparation:	
Classification of	270
Exhibitors, list of	318-319
Food (fish)	271, 375

	Page.
Food mills, etc	433-434
Key to installation of	279
Food products, animal:	
Classification of	269
Exhibitors, list of	300-302
Food stuffs:	
Classification of	270-271
Exhibitors, catalogue of	282-310
Food substances of vegetable origin, arrangement of exhibits	343-346
Forage and food of animals:	
Court of	410-415
Expert's report	411-415
Key to installation of exhibits	277-278
Fruits and fruit trees:	
Classification of	270
Description of exhibits	449-451
Exhibitors, list of	312-318
Grains and cereals	388-392
Expert's report	390-392
Key to installation of exhibits	274
Gun foundries, armor factories, etc., exhibits of publications	251
Harvesting machinery:	
Retrospective exhibit of, by Deering Harvester Company	456
Key to installation of	277
Models, list of	458-464
Retrospective exhibit of, by McCormick Harvester Company	483
Models, list of	484-485
Horticultural and arboricultural methods and appliances:	
Classification of	269
Description of exhibits	449
Exhibitors, list of	310-311
Horticulture and arboriculture (Group VIII):	
Assistance rendered the department	455
Classification of	269-270
Competitions, temporary	453-455
Effects of the exhibit	455
Implements	456
Installation	446-448, 451
Installation of exhibits, key to	280-282
Report of experts	449-456
Storage	451
Transportation	451
Insect products and entomology	384
Insects (useful) and their products, injurious, plant diseases, etc.:	
Classification of	269
Exhibitors, list of	310
Instruments of precision, coins and metals:	
Awards, list of	41
Awards, table of	51
Classification of	8
Collaborators, awards to	44
Description of exhibits	64-65
Exhibitors in	29-30
Jury, members of	37

	Page.
Jurors for liberal arts and chemical industries	35-39
Leather and skins:	
Awards, list of	42
Awards, table of	51
Classification of	10
Collaborators, awards to	44
Exhibitors in	33-34
Jury, members of	38
Liberal arts. (See <i>Literature, science, and art; processes, products, etc.</i>)	
Liberal arts, and chemical industries, department of (Groups III and XIV):	
Awards, list of	39-44
Awards, table of	51
Classification	8-11
Description of exhibits	52-97
Director's narrative	45-97
Exhibitors, catalogue of	14-35
Exhibitors, table of	51
Illustrations, key and titles	13
Installation, key to	11-13, 75-76
Jurors, list of	35-39
Packages of exhibits, number of	49
Publishers' building	83-96
Report of department	5-97
Contents of report	7
Space allotments, table of	47
Space areas, table of	46
Staff of department	7
Life insurance companies, exhibits	92-94
Liquid-air exhibit, description of	82-83
Literature, science, and art, appliances and processes (Group III):	
Awards, table of	51
Awards to exhibitors, list of	39-41
Classes, space assignments in	47
Classification of	8-9
Collaborators, awards to	43-44
Collective, of about 400 United States newspapers, class journals, etc., list of contributors	58-62
Description of exhibits	52-75
Director, appointment of	45
Exhibitors, catalogue of	14-35
Exhibits—	
Description of	52-96
Installation of	48-49
Packages shipped, number of	49
Shipment of	48
Façade	46
Funds of the department, how received and disbursed	96-97
Illustrations, key and titles to	13
Installation of exhibits, key to	11-13
Office of the department	46
Report of department	5-97
Conclusion of	96-97
Space, assignments of	47
Space assigned the department	45-46

	Page.
Liquors, spirituous and malt, arrangement of exhibits	345-346
Locomotives	231
Machine tools:	
Classification of	103-104
Exhibitors, list of	108-111
Exhibits, description of	153-159
Machinery and electricity. Department of (Groups IV and V):	
Assistant director appointed	123
Awards received by exhibitors, number of	141
Building, special, for the United States at the Bois de Vincennes	125
Classification of exhibits	103-104
Confusion in Champ de Mars space	135
Delay and expense caused by loss of steamer <i>Pauillac</i>	136-137
Director's narrative	121-145
Conclusion of	144-145
Exhibits—	
Classification of	103-104
Description of	146-173
Exposed	139
Key to installation of	116-120
Packing and return of	144
Façade of Salon d'Honneur	136
Illustrations, key and titles to	116
Jury, appointments, special	141
Narrative of director	121-145
Obligations of the department, discharge of	144
Opening of Exposition, Champ de Mars section not complete at	137
Patent Office, Washington, D. C., exhibits contributed by	171-173
Power for the Exposition, proposition to furnish	123
Report, department of	99-173
Contents of report	101
Retrospective exhibit	124, 138, 164-173
Collection of	164
Difficulties	165
Exhibits, description of	166-169
Installation	165-166
Specimens constituting the exhibit	169-173
Space demands and supply	124
Space problem	122-123
Staff of department	101-102
Members resign to act as jurors	140-141
Triangular tract of ground conceded to the United States, at Vincennes ..	131
Withdrawals at last moment	135
Machinery (Group IV):	
Annex at the Bois de Vincennes—	
Approval by Commissioner-General and machinery experts	125
Cost of	127
Cost of, shared by exhibitors	125
Covering for	128
Difficulties	127
Dismantling of	143-144
Enlargement of	131
Erection of	134-135
Opening of	139

Machinery (Group IV)—Continued.	Page.
Annex at the Bois de Vincennes—Continued.	
Operation of	142-143
Power plant for building.....	129-130
Plant completed.....	131-132
Installing of.....	135
Special service rendered by	143
Progress of.....	128
Sale of.....	142
Size and style of.....	125-126
Space for building granted	125
Steel secured.....	128
Catalogue of exhibitors	104-111
Classification of	103-104
Exhibitors, catalogue of	104-111
Exhibits—	
Champ de Mars, key to installation of	116-118
Description of.....	147-159
Salon d'Honneur, key to installation of.....	120
Triangle (United States), key to installation of	120
Vincennes annex, key to installation of	118-119
General machinery—	
Exhibitors, list of	106-108
Exhibits, description of.....	148-153
Vincennes exhibit, enlargement of	130
Maize kitchen.....	395-398
Report of expert	397-398
Maps and apparatus for geography, etc.:	
Classification of	8
Description of exhibits.....	62-64
Exhibitors, list of	29
Jury, members of	36
Marine, mercantile, etc.:	
Classification of	178-179
Description of.....	237-248
Exhibitors, list of	189-192
McCormick Building at Vincennes	486
Meat, fish, vegetables, and fruit (preserved):	
Classification of	270
Exhibitors, list of	319-321
Meat and dairy exhibits	376
Meat exhibits, installation, key to.....	273
Meat products, arrangement of exhibits.....	342-343
Medicine and surgery:	
Awards, list of	41
Awards, table of.....	51
Classification of	9
Collaborators, awards to	44
Description of exhibits.....	65-69
Exhibitors, list of	30-31
Jury, members of	37
Military and naval (Group XVIII):	
Awards to exhibitors	253
Classification of	179-180
Exhibitors, catalogue of	192-194
Illustrations, key to	248

	Page.
Military and naval (Group XVIII)—Continued.	
Packages received	253
Space allotments	248
Military engineering and accessories:	
Awards	253
Classification of	179
Exhibitors, list of	192
Exhibits, list of	250
Mineral water, etc., key to installation of exhibits	278
Mississippi River improvements	208-212
Motors, various:	
Classification of	103
Exhibitors, list of	106
Exhibits, description of	148
Musical instruments:	
Awards, list of	42
Awards, table of	51
Classification of	9
Collaborators, awards to	44
Description of exhibits	69-74
Exhibitors, list of	31-32
Jury, members of	37
Naval construction, hydraulics and torpedoes:	
Awards	253
Classification of	179
Exhibitors, list of	192-193
Exhibits, list of	250-251
Newspapers, class journals, etc., collective exhibit of, list of contributors	58-62
Newspapers and publications, number of, in the United States, table	63
New York City engineering department, exhibit of	223-224
Plants of the conservatory:	
Classification of	270
Description of exhibits	451
Exhibitors, list of	318
Patent Office, Washington, D. C., exhibits contributed to installation of machinery and electricity	171-173
Paper, manufacture of:	
Awards, table of	51
Awards, list of	42
Classification	10
Exhibitors in	33
Jury, members of	38
Perfumery:	
Awards, list of	43
Awards, table of	51
Classification of	11
Exhibitors in	34
Jury, members of	39
Photography:	
Awards, list of	40
Awards, table of	51
Classification of	8
Collaborators, awards to	43
Description of exhibits	55-56
Exhibitors, list of	17
Jury, members of	36

	Page.
Post-office museum exhibit.....	234
Posters, collective exhibit of, list of contributors to	18
Printing machinery, etc. (See Topography.)	
Public works, models, etc.:	
Classification of	177
Description of	204-227
Exhibitors, list of	181-183
Publishers' building.....	83-96
Exhibits in	85-96
Features of	95
Jury's appreciation of	95
Key to installation of.....	83-84
Location of exhibits	96
Opening of.....	50
Origin of.....	85
Railways, equipment, etc.:	
Air brakes	232-233
Classification of	178
Couplers, signals	233, 234
Description of	229-237
Exhibitors, list of	185-189
Freight cars.....	232
Retrospective	234
Street cars	234
Retrospective exhibit of harvesting machinery by Deering Harvester Co	456
Retrospective exhibit of harvesting machinery by McCormick Harvester Co..	483
Saddlery and harness:	
Classification of	178
Description of.....	229
Exhibitors, list of	185
Salon d'Honneur, façade.....	136
Seeds and plants for gardens and nurseries:	
Classification of	270
Description of exhibits	451
Exhibitors, list of	318
Sirups and liquors, distilled spirits, commercial alcohols:	
Classification of	271
Exhibitors, list of	324
Steam engines:	
Classification of	103
Exhibitors, list of.....	104-106
Exhibits, description of	147-148
Steel-frame construction	217-223
Sugar and confectionery, condiments and relishes:	
Exhibitors, list of	321-322
Exhibits—	
Arrangement of	345
Classification of	271
Description of.....	407-409
Key to installation of.....	278
Telegraphy and telephony:	
Classification of	104
Exhibitors, list of	114-115
Exhibits, description of.....	161-162

	Page.
Textile fibers, arrangement of exhibits.....	346
Theatrical appliances, etc.:	
Awards, list of	42
Awards, table of	51
Classification of	9
Collaborators, awards to	44
Description of exhibits	74-75
Exhibitors in	32
Jury, members of	37
Times, New York, Paris Exposition edition.....	50, 88-91
Tobacco and matches:	
Awards, list of	43
Awards, table of	51
Classification of	11
Exhibitors in	34-35
Jury, members of	39
Tobacco (leaf) court.....	415-419
Arrangement of exhibits.....	346
Key to installation of.....	277
Report of expert	416-419
Topography:	
Awards, list of	39-40
Awards, table of	51
Classification of	8
Collaborators, awards to	43
Description of exhibits.....	52-55
Exhibitors, list of	14-17
Jury, members of	35
Trees, shrubs, ornamental plants, and flowers:	
Classification of	270
Description of exhibits.....	451
Exhibitors, list of	318
Flowers, classification of	270
Vegetable food products:	
Classification of	269
Exhibitors, list of	286-300
Miscellaneous	345
Vegetable products, miscellaneous.....	398-402
Key to installation	274-280
Vegetable products not foods, arrangement of exhibits.....	346-347
Vegetables:	
Classification of	269
Description of exhibits	449
Vincennes exhibits of harvesting machinery.....	485-493
Viticulture, appliances and methods:	
Classification of	268
Exhibitors, list of	283
War Department exhibits.....	248-263
Weather Bureau	438
Report of expert.....	440-446
Charts, publications, photographs, etc	440
Forecasting processes, methods, and appliances, etc	441-442
Instruments and apparatus.....	442-445
For measuring pressure of air.....	442

Weather Bureau—Continued.	Page.
Instruments and apparatus—Continued.	
For registering temperature of air	443
For measuring moisture of air	443
For measuring precipitation	443-444
For measuring and registering direction and velocity of wind	444
For recording duration of sunshine	444
For use in cloud observations	444
Meteorograph	444
Shelter of	445
Kites and aerial apparatus	445
Wines and brandies:	
Classification of	271
Exhibitors, list of	322-324
Wines and champagnes, ciders, etc., arrangement of exhibits	345
Wines and liquors	402-407
Key to installation	275-277
Report of expert	404-407
Wool, report of expert	420-422
Yacht (American), evolution of	239-248

INDEX TO VOLUME IV.

	Page.
Asphalt and processes	120
Bleaching, dyeing, printing, and finishing textiles:	
Classification of	219-220
Exhibitors, list of	221
Bronze and cast-iron works of art, etc.:	
Classification of	149
Exhibitors, list of	158
Table of, with description of exhibits and awards granted.....	209-210
Brushes, leather articles, fancy articles, basket work, etc:	
Classification of	149
Exhibitors, list of	158-159
Table of, with description of exhibits and awards granted.....	210
Business methods	177
California State commission, collective exhibit of ores and minerals, contribu-	
tors to.....	68-75
Carpets, tapestries, and fabrics for upholstery:	
Classification of	146-147
Exhibitors, list of	152
Table of, with description of exhibits and awards granted.....	201
Cash registers	176-177
Catalogue of exhibits and exhibitors from the United States	233-423
Ceramics:	
Classification of	147
Collaborators	211
Exhibitors, list of	152-155
Table of, with description of exhibits and awards granted.....	202-207
Clay	118
Clock and watch making:	
Classification of	149
Collective exhibit of.....	185
Exhibitors, list of	158
Table of, with description of exhibits and awards granted.....	209
Report, expert for.....	185
Clothing, various industries connected with:	
Classification of	221
Exhibitors, list of	224
Coal and coke.....	117-118
Copper. (<i>See Metallurgy.</i>)	
Crops, wild, etc.:	
Awards.....	45
Classification of	11
Exhibitors, list of.....	19
Cutlery:	
Classification of	148
Collaborators	211

Cutlery—Continued.	Page.
Exhibitors, list of	157
Table of, with description of exhibits and awards granted	208
Cuba, awards in mining and metallurgy	142
Decoration of public buildings and dwellings:	
Classification of	146
Collaborators	211
Cost to exhibitors (estimated)	185
Exhibitors, list of	150-151
Table of, with description of exhibits and awards granted	197
Report of expert on	183-185
Decoration and furniture of public buildings and dwellings (Group XII):	
Classification of	146-148
Collaborators	211-212
Exhibitors, catalogue of	150-156
Diversified industries (Group XV):	
Classification of	148-150
Collaborators	211-212
Exhibitors, catalogue of	157-159
Exhibitors (varied industries) at different international expositions, number of	195-196
Forestry and fisheries:	
Annex in the Champ de Mars—	
Exhibits, key to installation of	9-10
Annex at Vincennes—	
Construction, table of materials	45
Exhibits, key to installation of	10
Awards to exhibitors—	
By grade	39-41
By classes	41-45
Number of, table	45-46
To different nations, comparison of	46
Cases, contract for, etc.	30-31
Catalogue of exhibitors	12-19
Classification of exhibits	11
Collective exhibit of forestry, list of contributors	12-17
Difficulties	32-33
Director's narrative	21-62
Employees of department and salaries	24
Exhibitors—	
Awards to	39-45
Catalogue of	12-19
Catalogue of, from the United States	233-423
Exhibits—	
Catalogue of, from the United States	233-423
Classification of	11
Collecting	26-28
Description of	46-62
Installation of	30-37
Key to installation of	7-10
Promotion of	24-26
Return of	38-39
Transportation of	28-30
Fish and fishing, products and equipment—	
Awards	43-45

Forestry and fisheries—Continued.	Page.
Fish and fishing, products and equipment—Continued.	
Classification of	11
Exhibitors, list of	18-19
Fisheries—	
Description of exhibits	52-58
Literature exhibited	57-58
Merit of United States exhibit, article on	61
Forestry—	
Description of exhibits	46-52
Forestry, appliances, etc.:	
Awards	41-42
Classification of	11
Exhibitors, list of	12
Forestry, products, etc.:	
Awards	42
Collective exhibit, list of contributors	12-17
Classification of	11
Exhibitors, list of	12-17
Furniture for the department, etc	31
Game, exhibited, list of	59-61
Illustrations, key and titles to	7
Installation of exhibits, key to	7-10
Merit of United States exhibit, article on	61
Narrative of director	21-62
Pictures, transparencies, etc., list of	34-36
Preliminary work	21-24
Promoting exhibits	24-26
Report department of	5-62
Contents of report	7
Space occupation	39
Staff of department	21-23
Furniture:	
Classification of	146
Exhibitors, list of	151-152
Table of, with description of exhibits and awards granted	200-201
Glass and crystal:	
Classification of	147
Collaborators	211
Exhibitors, list of	155
Glass, stained:	
Classification of	146
Collaborators	211
Collective exhibit of	186-187
Exhibitors, list of	151
Table of, with description of exhibits and awards granted	198-200
Garments, tailor made, fur, etc	229-230
Horse collars, pneumatic	176
Heating and ventilation, apparatus, etc	179-183
Classification of	147-148
Cost to exhibitors, estimated	183
Exhibitors, list of	155-156, 180-182
Report of expert on	179-183
Hardware:	
Exhibitors, list	104-105

Hunting:	Page.
Description of exhibits	58-62
Game exhibited, list of	59-61
Merit of United States exhibit, article on	61
Hunting equipments:	
Awards	42
Classification of	11
Exhibitors, list of	17
Hunting products:	
Awards	43
Classification of	11
Exhibitors, list of	17-18
Index to catalogue of United States exhibits and exhibitors	425-484
India rubber and gutta-percha industries—articles for traveling and encamp- ing, etc.:	
Classification of	149-150
Collective exhibit of	186
Exhibitors, list of	159
Table of, with description of exhibits, and awards granted	210
Report of expert for	186
Iron. (<i>See</i> Metallurgy.)	
Iron and steel products and steel rails	127-128
Jewelry and silverware, etc.	212
Jewelry:	
Classification of	149
Exhibitors, list of	157-158
Table of, with description of exhibits, and awards granted	209
Collaborators	212
Laces, embroideries, and trimmings:	
Classification of	220-221
Exhibitors, list of	223
Laces and linens	230
Leather goods	176
Legion of Honor decorations in department of varied industries	194
Light-diffusing globe, exhibit of	212
Lighting (not electrical) apparatus and methods:	
Classification of	148
Collaborators	211
Exhibitors, list of	156
Table of, with description of exhibits, and awards granted	207
Metal working:	
Awards	141-142
Awards to collaborators	142
Exhibitors, list of	104-105
Exhibits, description of	124-137
Classification of	68
Metals (<i>see</i> Report of department of mining and metallurgy)	63-142
Metallurgy:	
Apparatus and plants, drawings of	135
Appliances and processes	134-135
Awards	140-141
Awards to collaborators	141
Cables	131
Clay—silica	133-134
Copper	131-132

Metallurgy—Continued.	Page.
Exhibitors, list of	103-104
Exhibits, description of	124-137
Classification of	67-68
Lead	133
Pig iron	131
Tin	132-133
Minor metallurgy	121-123
Mines, ore beds, stone quarries, etc.:	
Awards	137-140
Awards to collaborators	139-140
Classification of	68
California State commission, collective exhibit of ores and minerals, contributors to	72-75
Exhibitors, list of	69-102
Nevada State commission, collective exhibit of minerals, contributors to	89
North Carolina board of agriculture, collective exhibit of gold nuggets, contributors to	90
North Carolina State commission, collective exhibit of ores, contributors to	90-92
Petroleum	119-120
Mining and metallurgy: (Group XI.)	
Awards to exhibitors	137-142
Catalogues, commercial, exhibit of	136-137
Catalogue of exhibitors	69-105
Classification of exhibits	67-68
Director's narrative	107-137
Exhibitors—	
Awards to	137-142
Catalogue of	69-105
Exhibits—	
A representative exhibit	125
Classification of	67-68
Collection of	111
Collection of, mineralogists and special agents who assisted	109-110
Basic	125-127
Description of	114-137
Installation of	112-113
Installation, gallery floor, key to	66-67
Installation, ground floor, key to	65
Façade	113
Illustrations, key to	66
Installation of exhibits, key to	65, 66-67
Literary exhibit	136
Mineralogists, assisting	109-110
Narrative of director	107-137
Preliminary work	108
Report of department of	63-142
Contents of report	65
Space, allotment of	112
Space secured for the department	107-108
Staff of department	109-111
Salaries of	110
North Carolina board of agriculture, collective exhibit of gold nuggets, contributors to	90

	Page.
North Carolina State commission, collective exhibit of ores, contributors to ..	90-92
Nevada State commission, collective exhibit of minerals, contributors to	89
Optical goods	177
Ores (<i>see</i> report of department of mining and metallurgy)	63-142
Paper hangings:	
Classification of	146
Exhibitors, list of	151
Table of, with description of exhibits and awards granted	200
Pens, fountain	174-175
Petroleum	119-120
Playing cards	172-173
Rails, fish plates and angles, etc.	129
Razors, etc.	175-176
Shears and clippers	176
Sewing machines	228
Shoes	229
Shoe machinery	229
Silk, etc.:	
Classification of	220
Description of exhibits	228
Exhibitors, list of	223
Silk looms	230
Silversmiths' and goldsmiths' ware:	
Classification of	148
Collaborators	212
Exhibitors, list of	157
Table of, with description of exhibits and awards granted	208
Spinning and rope making, materials and processes:	
Classification of	219
Exhibitors, list of	221
Stationery:	
Awards	178-179
Classification of	148
Collaborators	211
Collective exhibit of	169-175
Exhibitors, list of	157, 178-179
Table of, with description of exhibits and awards granted	208
Spaces of exhibitors	178-179
Steel. (<i>See</i> Metallurgy.)	
Steel sheets and castings	130
Stone-burnishing tools	177
Stones, building and ornamental	118
Textiles: (Group XIII.)	
Awards to exhibitors	232
Number of	225
Catalogue of exhibitors	221-224
Classification of exhibits	219-221
Cost to exhibitors	231-232
Exhibitors—	
Catalogue of	221-224
Number of	225
Exhibits—	
Classification of	219-221
Description of	225-231
Weight, number of cases, value, etc	232

Textiles. (Group XIII)—Continued.	Page.
Illustrations, key and titles to	217
Installation	226-227
Installation of exhibits, key to	217-219
Report, department of	215-232
Contents of	217
Letter transmitting	225
Space, table showing how utilized	232
Staff of department	217
Textile fabrics, manufacture, etc.:	
Classification of	219
Exhibitors, list of	221
Threads and cotton fabrics:	
Classification of	220
Exhibitors, list of	222
Threads and fabrics of flax, hemp, etc.:	
Classification of	220
Exhibitors, list of	220
Timber, list of	49
North Carolina, list of	49
New York, list of	50
Tools, etc	121-123, 128-129
Toys:	
Classification of	150
Exhibitors, list of	159
Table of, with description of exhibits, and awards granted	210
Twine, machinery	231
Upholsterers' decorations:	
Classification of	147
Exhibitors, list of	152
Varied industries: (Groups XII and XV.)	
Acceptances of space, number of	196
Administration	166
Allotments	188
Applications for space, number of	162, 196
Appointment of director	161
Assignments of space, number of	196
Assistants, experts, etc	165-166
Catalogue of exhibitors	150-159
Classification of exhibits	146-150
Contracts signed	188
Cost to exhibitors	178
Decoration of the Legion of Honor	194
Description of exhibits	171-177
Electricity	192
Exhibitors, catalogue of	150-159
Individual spaces of	168
Exhibits—	
Classification of	146-150
Collective	169
Collective, of stationery	169-175
Description of	171-177
Pieces, number of	195
Values of, table	195

Varied industries: (Groups XII and XV)—Continued.

	Page.
Expenses	163
Façades, construction, and decorations.....	188-189
Guards	166
Individual spaces of exhibitors.....	168
Industries not represented	167-168
Illustrations, key and titles to.....	145-146
Installation, general.....	187
Cost of.....	195
Jury	178, 192-194
Janitor force	166
Legion of Honor decorations	194
Limitations	162-163
Material, disposal of.....	194-195
Occupation of space by exhibitors, number of	196
Organization	165-166
Organization, suggestions for	163-164
Preliminary work	161-164
Space in square feet in different classes	195
Statistics, table of	195
Transportation of exhibits	189-191
Report of expert for	189-191
Travel	166-167
Report department of	143-213
Conclusion of report	195
Contents of report.....	145
Letter transmitting report.....	161
Ventilating fans.....	189
Wearing apparel, making, etc.—	
Classification of	220-221
Exhibitors, list of	221-224
Withdrawals.....	189
Yarns and woolen fabrics—	
Classification of	220
Exhibitors, list of	222-223

INDEX TO VOLUME V.

	Page.
Agricultural machinery (class 35), report of juror.....	284-314
Appeals from awards granted	25-26
Architecture (class 10), report of juror.....	155-156
Art, works of, in bronze, cast iron and wrought iron, repousse work (class 97), report of juror	626-648
Awards—	
Diplomas	22-23
Appeals from	25-26
Presentation of	28-31
Address of the President of France	30-31
Programme of entertainment given	29
To collaborators of United States exhibitors	78-89
To United States exhibitors, list of	32-78
Beverages, various (class 62), report of juror	484
Books, publications, newspapers, posters, etc., processes and products (class 13), report of juror	177-180
Carriages, wagons, automobiles, cycles, detached parts and allied industries (class 30), report of juror	279-284
Ceramics (class 72), report of juror	529-545
Charities, public and private (class 112), report of juror.....	665-667
Chemical industries (class 87), report of juror	585-592
Circular letters sent to exhibitors	11
Civil engineering, materials, equipment, and processes (class 28), report of juror	230-238
Clock and watch making (class 96), report of juror	624-625
Clothing, various industries connected with (class 86), report of juror.....	573-585
Collaborators to United States exhibitors, awards granted to	78-89
Cotton fabrics (class 80), report of juror	554-555
Cutlery (class 93), report of juror	608-609
Decorations of dwellings and public edifices, permanent (class 66), report of juror	520-529
Diplomas	22-23
Education:	
Agricultural (class 5), report of juror	136-148
Elementary (class 1), report of juror	91-97
Higher (class 3), report of juror.....	99-136
Secondary (class 2), report of juror.....	97-99
Electric lighting (class 25), report of juror	212-221
Engraving and lithography (class 8), report of juror	153-154
Exhibitors from the United States, awards granted to	32-78
Collaborators, awards to	78-89
Hors concours (out of competition)	31-32
Farinaceous products and their derivatives (class 56), report of juror	363-364

	Page.
Food products:	
Animal (class 40)	321-343
Vegetable (class 39)	314-321
Forests and forest industries, products of cultivation (class 50), report of juror	358-363
Fruit trees and fruits (class 45), report of juror	354-358
Heating and ventilation, apparatus and processes (class 74), report of juror	545-551
Hors concours (out of competition) exhibitors from the United States	31-32
Horticulture and arboriculture, methods (class 43), report of juror	351-354
Hygiene (class 111), report of juror	664-665
Industries, large and small (class 103), report of juror	648-654
Instruments of precision (class 15), report of juror	180-188
Jewelry—equipment, processes, and products (class 95), report of juror	612-616
Jurors:	
Appointment, form of letter	13
List of, for the United States	14-18
Number of, for the United States	13
Reports of	91-667
Juries:	
International, organization and duties of	20-22
Meetings	19
Officers of, elected from among the United States jurors	23
Organization	9-10
Superior jury—	
Appeals to, for higher awards	28
Committee of	28
Members of	27
Organization	26
Juror in chief:	
Letter transmitting report	7
Report of	9-89
Jury work at Paris	12
Leather and skins (class 89), report of juror	592-597
Letters sent to exhibitors	11
Machinery, general (class 21), report of juror	200-212
Medicine and surgery (class 16), report of juror	188-192
Metal working (class 65), report of juror	516-520
Metallurgy (class 64), report of juror	489-515
Mines, minerals, and mining machinery (class 63), report of juror	484-489
Musical instruments (class 17), report of juror	192-199
Officers of juries, elected from among the United States jurors	23
Organization and duties of the international jury	20-22
Paintings, cartoons, drawings (class 7), report of juror	148-153
Perfumes (class 90), report of juror	597-601
Photography (class 12), report of juror	159-168
Printing—machinery, processes and products (classes 11 and 13):	
Report of jurors (class 11)	156-159
Report of juror (class 13)	177-180
Report of expert (classes 11 and 13)	168-177
Public works, models, plans, and designs (class 29), report of juror	239-279
Reports of the jurors	91-667
Silk, and fabrics of silk (class 83), report of juror	559-573
Silver and goldsmith industry (class 94), report of juror expert	616-623
Silversmiths' and goldsmiths' wares (class 94), report of juror	609-611

	Page.
Sugars, teas, confectionery, condiments, and stimulants (class 59), report of juror	364-468
Telegraphs and telephones (class 26), report of juror.....	221-229
Textile plants (class 41), report of juror.....	343-351
Theatrical appliances (class 18), report of juror.....	199-200
Tobacco leaf (class 91), report of juror	601-608
Typography and different methods of printing (class 11), report of jurors ..	156-159
Wearing apparel, manufacture of, equipment and processes (class 79), report of juror	551-554
Wines and brandies (class 60), report of juror	468-471, 471-484
Workingmen, institutions for the mental and moral improvement of (class 108), report of juror.....	654-664
Yarns and fabrics of wool (class 82), report of juror	555-559

INDEX TO VOLUME VI.

	Page.
Aeronautics, report of delegate to congress	346-349
Agricultural experiment stations, congress of	18
Agricultural syndicates (mutual benefit), congress of	18-19
Alpinism, report of delegate to congress	337-342
Americanists, report of delegate to congress	20-43
Arboriculture and pomology, report of delegate to congress	15-17
Archæology and prehistoric anthropology, report of delegate to congress	43-53
Architects, report of delegate to congress of	53-57
Basque studies, congress of	57-58
Bee culture, report of delegate to congress	58-63
Bibliography, congress of	63
Blind, congress for amelioration of the condition of	64
Botany, report of delegate to congress	64-69
Building materials, congress on methods of testing, report of delegate	70-83
Buildings, congress on ownership of	69
Charities, public and private, report of delegate to congress	83-90
Chemistry (applied), report of delegate to congress	90-99
Chronometry, report of delegate to congress	99-101
Colonial congress, report of delegate	101-105
Colonial sociology, report of delegate to congress	105-112
Commercial travelers, congress of	113
Congresses, international:	
Delegates, reports of	15-352
List of, with names and addresses of secretaries	8-9
Regulations for	9-12
Report of director of organization	5-13
Reports of delegates	15-352
Cooperative alliance (international), congress of	19-20
Copyright congress, report of delegate to	113-125
Customs congress	125-126
Deaf-mute congress, report of delegate to	126-136
Dental congress, report of delegate to	136-140
Dermatology and syphilography, report of delegate to congress	140-141
Drawing, report of delegate to congress of instruction in	141-149
Education (elementary), report of delegate to congress	149-151
Education (higher), report of delegate to congress	171-174
Education (popular), congress of	174
Education (primary), report of delegates to congress	151-155, 156-158
Education (secondary), report of delegate to congress	158-171
Education (social), congress of	174-177
Educational press, congress of	177
Electro-therapeutics, report of delegate to congress	178-179

	Page.
Fencing, congress of	179
Fine arts, congress of	179-182
Folklore, congress of	182-183
Forestry, congress of	183-184
Fruits (beverage-yielding), congress of	63
Gas congress, report of delegate	184-194
Geography, economic and commercial, report of delegate to congress	194-197
Geologists, report of delegate to congress of	198-204
Gold and silver standards, unification of, report of delegate to congress	295-299
Graphology, congress of	204-205
Grocery congress	205
History, comparative, report of delegate to congress	205-208
Homeopathy, congress of	212
Hygiene, report of delegate to congress	212-216
Hypnotism, report of delegate to congress	216
Insurance, social, and accidents to labor, report of delegate to congress	319-324
Labor, legal protection of, report of delegate to congress	324-329
Law, maritime, congress of	217-218
Letter sent to proposed delegates	13
Librarians, report of delegate to congress of	218-225
Life-saving and first aid to the injured, congress of	226
Maritime law, congress of	217-218
Marine, merchant, report of delegate to congress	237-242
Mathematics, report of delegate to congress	226-234
Mechanics, applied, congress of	234-235
Medical press, report of delegate to congress	236-237
Medicine, professional, and medical deontology, report of delegate to congress	236
Medicine, report of delegate to congress	235-236
Merchant marine, report of delegate to congress	237-242
Meteorology, report of delegate to congress of	349-352
Millers and milling, congress of	242-243
Music, congress of	243
Naval architecture, congress of	57
Navigation, report of delegate to congress	243-255
Numismatics:	
Congress of	256-257
Report of delegate to congress	335-337
Ornithological congress	257-258
Peace congress	258-259
Philosophy, congress of	259-262
Photography, congress of	263
Prisoners' aid societies, congress of	263
Psychology, report of delegate to congress	264-266
Railway congress, report of delegate	266-281
Ramie-defibrating machines, report of delegate to congress	343-346
Regulations for congresses	9-12
Religions, history of, report of delegate to congress	208-212
Reports of delegates from the United States to the international congresses ..	15-352
Schools (commercial), congress on	112
Steam apparatus, supervision and safety of, congress of	281
Stock (joint) companies, congress of	217
Sunday-rest congress, report of delegate to	281-286

	Page.
Theatrical art, congress of.....	286
Thread numbering, congress of.....	286-289
Tobacco congress.....	289-290
Tramways, report of delegate to congress	290-294
Vegetarian congress	300
Viticulture, report of delegate to congress.....	300-303
Wines and liquors, report of delegate to congress.....	304-306
Wine, spirits, and liquors, commerce, congress of.....	306
Woman's works and institutions, report of delegate to congress.....	306-314
Women, patronage of young working women, housing, etc., report of delegate to congress.....	316-319
Workingmen's association of production, congress of.....	315
Workingmen's houses, report of delegate to congress.....	330-335
Workmen, legal protection of, congress of.....	314-315

INDEX TO ILLUSTRATIONS, VOLUME I.

	Page.
Alexandre Bridge, view of	48
Champ de Mars and adjoining sections, bird's-eye view of	18
Civil engineering and transportation, façade of palace	102
Cuba, plan installation of exhibits	248
Esplanade des Invalides	58
Exposition grounds, general plan of	14
Fine arts, entrance to United States exhibit	112
Fine arts palaces	66
Fountain, electrical and water, Champ de Mars	32
Guard, United States	240
Hawaii, plan installation of exhibits	248
Horticultural building, view in	190
Lafayette coin dollar, receptacle for	172
Lafayette monument	180
Machinery annex, United States, Bois de Vincennes	94
Main entrance, Exposition grounds	24
National Pavillion:	
United States	11
American Chamber of Commerce in Paris, reception room	380
Banquet room	386
California State reception room	336
Main entrance	228
Massachusetts State reception room	370
New State room	310
Opening of, Sousa and his band	136
Plans of	196, 200, 204, 208, 212
Reception room	320, 356
Reception and waiting room	284
Rotunda, ground floor	234, 254
from second balcony	264
Waiting room, ground floor	274
Woman's room	290
Writing room	296
National pavilions, River Seine	74
Publishers' building, view of	154
Salles des fêtes, main floor	40
Textiles, view in French section	126
Trocadero section and palace	84

INDEX TO ILLUSTRATIONS, VOLUME II.

	Page.
Agriculture, exhibit section, view of exhibit of fruits.....	140
Agricultural section, façade, view of	310
Architectural exhibit:	
Panel of, showing tall buildings	566
Panel of, showing church and country house architecture	566
Battle ships and cruisers, view of United States exhibit	180
Champ de Mars section, view of	24
Charities:	
Hygiene, view of installation of exhibits	474
Public, plan of installation	331
Education:	
Exhibit section	100
East aisle	40
Plan of installation	328
Educational:	
Exhibits, view of installation in Esplanade des Invalides section	464
Section, view of elementary educational exhibits	364
View of façade	334
View of Indian exhibits	374
View of installation	344
View of west aisle	354
View of hall of honor	298
Elementary education, view of installation	364
Exhibit palaces, Champ de Mars, view of façades	24
Fine arts:	
Plan of galleries installation	490
Front view of small palace	4
General plan of installation	488
Views of installations of exhibits.....	494, 502, 510, 518, 526, 532, 540, 548, 556
Furniture:	
Varied industries section, view of installation	80
View of exhibit section	318
Hall of honor, electrical section, view of	298
Heating and ventilation, plan of installation	331
Horticulture, apple and fruit exhibit, view of	140
Hospital exhibits, view of	404
Hygiene and charities, view of installation of exhibits	474
Indian exhibits, educational section, view of	374
Industrial exhibits, negro, view of	414
Industries:	
Maps and plans showing distribution of, view of installation	434
Typical, view of installation of exhibits	444
Johns Hopkins University, view of exhibit	100

Liberal arts:	Page.
Entresol, view of	280
Exhibit section, view of	270
Façade, view of	280
Machinery annex:	
United States, exterior view of	240
View of	160
Maps, view of installation in social economy section	434
Mining and metallurgy, view of French copper installation	200
National pavilion, United States, waiting room	60
Navy, United States, exhibit of models of battle ships and cruisers	180
Negro exhibits, social and industrial, view of exhibits	414
Plans, view of installation in social economy section	434
Publishers' building, interior view	220
Pure science exhibits, view of	394
Science, pure, view of exhibits of	394
Social exhibits, negro, view of	414
Social economy, plan of installation	330
Social economy section, view of façade	424
Technical schools, view of exhibits	384
Tenement house exhibits, view of installations of models	454
Textiles, exhibit section	120
Textile section, façade, view of	310
Varied industries:	
Exhibit section	80
Façade, view of	318
Wearing apparel, textile section, view of installation	120

INDEX TO ILLUSTRATIONS, VOLUME III.

Agricultural annex United States, views of:	Page.
Exterior view	464
First floor	280
Ground floor	280, 466, 470
Second floor	280, 472, 476
Third floor	394
Agriculture:	
Façade—	
Bird's-eye view of, looking west	328
Main portal of, and main transverse aisle	328
Section of, showing arrangement of pier cases in the arches	332
General view of space, showing installation of dairy court and bee-keeping exhibits	336
Plan of installation of United States space on ground floor	270
View of space, showing general installation	342
Air brakes and steel-tired wheels, view of installation	212
Army and Navy, plan of installation of United States space	262
Automobile and railway building, plan of United States space (Bois de Vincennes)	196
Automobiles, etc., view of installation (Champ de Mars), (two views)	198
Bicycle building of the United States, at Vincennes:	
Plan of installation	196
View of exterior	236
Car couplings, etc., view of installation	208
Cars (steel), United States space in railroad building at Bois de Vincennes ..	208
Cereal-food exhibits, view of installation	420
Chemical industries:	
Installation—	
Showing booth, pavilion, and tower	76, 78
Showing arches at center of section	80
Plan of installation	74
Civil engineering and transportation, plan of installation of United States space:	
First floor	196
Ground floor	196
Corn kitchen, view of, in agricultural annex	394
Dairy exhibits, agricultural section	378
Dental-supply exhibits in liberal-arts space	56
Electrical apparatus and supplies, view of general installation, palace of electricity:	
First floor	144
Ground floor	144
S. Doc. 232, pt 6—28	433

	Page.
Engineering models, etc., view of installation	198
Farm-machinery exhibits, view of installation	460
Farm and factory scene	468
Fish-food exhibits, view of installation	374
Hall of honor, plan of installation of	120
Horticultural implement exhibits, view of installation of	456
Horticultural space, general view of	442
Horticulture, plan of installation of United States spaces	281
Insurance (life) companies, views of exhibits in publishers' building	92, 94
Liberal arts:	
Entresol—	
General view of	56
Installation of exhibits	54
Façade—	
View from southeast	44
(Rear) and general view through space	44
General view of installation	66
Plan of installation	10
Life insurance exhibit, publishers' building:	
Exterior view	92, 94
Interior view of	92, 94
Liquid-air plant, installation of	82
Locomotive exhibit, Bois de Vincennes	204
Machine tool exhibit:	
United States machinery annex, Bois de Vincennes	128
Exhibit in machinery palace, Champ de Mars	134
Machinery, United States annex at Vincennes:	
Exterior view	124
Interior view, showing style of installation	128
Plan of installation	118
Machinery and electricity:	
Collective exhibit of the United States	120
Plan of installation of United States space	116
General installation, Champ de Mars	134
Mails, models illustrating transportation of, in the United States, merchant marine annex of the United States	244
Map of city of New York, palace of civil engineering and transportation	204
Marine navigation, palace of, and general view of the Seine	6
McCormick harvesting machinery building at Vincennes	486
Meat exhibits, packing-house refrigerator, etc	386
Merchant marine annex (United States), occupied by Post-Office and Weather Bureau exhibits:	
Exterior view of	244
Plan of installation of	252
Mechant marine, façade of navigation exhibit	220
Milling exhibits and cereal foods, view of installation	392
Musical instrument installation, rear of façade, liberal arts space	72
Navigation (commercial), plan of installation of United States space	196
Newspaper press, and center view of publishers' building	88
Packing house, exhibit of model, in meat and grain court, agricultural section	368
Piano factory model exhibit	72

	Page.
Publishers' building:	
Exterior view, southwest corner.....	86
Interior view, north aisle.....	86
Installation, plan of.....	84
Interior view, showing north aisle.....	96
Railroad building (United States), exhibit of steel cars, etc.....	220
Railway and automobile building, plan of United States space (Eois de Vincennes).....	196
Salon d'Honneur, façade of:	
Palace of electricity and machinery.....	150
North aisle and entrance to façade.....	156
Interior of façade, view of installation.....	166
Signaling apparatus, etc., view of installation.....	212
Steamship models, view of installation.....	230
Surgical theater, liberal arts space.....	66
Tobacco, collective exhibit of.....	358
Transportation and civil engineering, plan of installation of United States space:	
First floor.....	196
Ground floor.....	196
Typesetting machines, center of publishers' building.....	90
United States bicycle building at Vincennes:	
Exterior view.....	236
Plan of installation.....	196
United States triangle at Vincennes, plan of installation of.....	118
Weather Bureau exhibit in the marine annex, showing recording instruments.....	438
Wine and liquor exhibits, view of installation of.....	402
Yachting:	
Collective exhibit, view of façade.....	230
Models illustrating history of, view of installation.....	236

INDEX TO ILLUSTRATIONS, VOLUME IV.

	Page.
Bronzes in United States, varied industries section.....	172
Ceramics in United States, varied industries section.....	172
Copper exhibit, space of mining and metallurgy.....	130
Cotton and silk exhibit, United States textile section	232
Dresses (evening) in United States textile section	228
Forestry, fisheries, and the chase, palace of	4
Forestry, plan of installation of, United States space.....	6
Forestry:	
United States annex, Champ de Mars—	
Exterior view of.....	12
Interior view	12
Plan of installation of.....	9
United States annex at Vincennes—	
Exterior view of.....	24
Plan of installation	10
View of United States installation	24, 40, 41, 56, 57
Furniture and interior decorations in United States varied industries section..	110
Furniture exhibit in United States section of varied industries.....	110
Gold-ore exhibit, space of mining and metallurgy	86
Heating and ventilating apparatus exhibit in United States section of varied industries section.....	196
Iron and fuel exhibit in space of mining and metallurgy	120
Iron and steel literature, exhibit of, in space of mining and metallurgy.....	140
Metallurgy, minor, view of space.....	120
Mining and metallurgy:	
Collective ore exhibit	94
Exhibits of institutions of learning	104
General view of space	76
Main entrance and portcullis.....	76
Plan of installation of United States space, ground floor.....	65
United States gallery space.....	66
View from gallery.....	86
View showing façade.....	112
Petroleum section:	
Interior view	112
Mining and metallurgy	104
Sewing-machine exhibit in gallery space of textiles.....	228, 232
Shoe-machinery exhibit, United States section of textiles	232
Show case in varied industries section	180
Silk cases in United States textile section	224

	Page.
Silk exhibits in United States textile section	224
Stationery exhibit, space of varied industries	160
Steel exhibit, mining and metallurgy section	130
Stone, clay, and gem exhibit, space of mining and metallurgy	94
Tailors' exhibit, United States textile section	228
Textiles:	
Plan of United States space, ground floor	116
Plan of United States space, gallery	118
Showing United States escalator and exhibits	224
View of façade	220
View of façade showing embroidery thereon	220
View showing fur exhibits	220
Tin exhibit, space of mining and metallurgy	140
Varied industries:	
General view	196, 180
North façade of United States section	146
Plan of installation of United States space	197
South façade of United States section	146
United States section, aisle view	160

INDEX TO ILLUSTRATIONS, VOLUME V.

	Page.
Agricultural section, view of installation	292
Ceramics from Sevres school, French educational section.....	84
Coal and coke exhibit, mining and metallurgy section	470
Educational exhibit, French section, showing wood and iron work.....	122
Education:	
French section, showing wireless telegraphy apparatus.....	146
In agriculture, French section.....	98
In fine arts, French exhibit	78
Industrial and commercial, French exhibit	116
Primary, models in wood and iron	36
Secondary, French exhibit of	66
View of French section	26
Electrical installation of the United States, general view of.....	230
Engineering exhibit of Massachusetts.....	254
Forestry annex:	
Exterior view	358
Wood exhibit.....	362
French schools at Athens, view of exhibit.....	72
Grueby pottery, specimens of	536
Hat exhibit in textile section	342
Horticultural:	
Exhibit, fruits.....	350
Exhibit, view of installation	354
Implement section, view of installation.....	332
Jewelry, ceramics, etc., view of exhibit in varied industries section.....	618
Liberal arts:	
Façade	192
View of exhibits under entresol	178
Machinery and electricity, view of installation	204
Machinery annex, Bois de Vincennes, interior view	200, 210
Manual training school exhibits	30
Medal of the Exposition, facsimile of	14
Mining and metallurgy exhibit, steel and iron exhibit	392
Model American printing office	166
Model French primary schoolroom	134
Naval exhibit, view showing electrical apparatus and machinery	218
Newcomb College pottery, specimens of.....	538
Oil-well and windmill exhibit.....	428
Ore exhibit, view of installation	508
Perfumes, picking flowers for, in France.....	364, 586, 598
Photographic section, view in	168

	Page.
Printing apparatus in publishers' building	176
Printing press exhibits	161, 171
Publishers' building, view showing general office.....	156
Rookwood pottery, specimens of	534, 544
Schools:	
Agricultural, French section	110
For boys, technical, exhibit of wood and iron work	60
For girls, view of exhibit	54
Technical, of Paris, view of exhibit.....	42
Seine River, showing different national pavilions	8
Social economy, view of installation	650, 664
Sousa and his band at the palace of fine arts.....	20
Steel, table showing hardness, etc	490
Technical schools for girls, collective exhibit of	48
Tissues in French educational section.....	92
Varied industries section, view of jewelry exhibit	636
Veterinary schools, French exhibit.....	104
Woodwork exhibit in French educational section.....	128

INDEX TO ILLUSTRATIONS, VOLUME VI.

	Page.
Agriculture, view of façade.....	58
Educational exhibit:	
Façade of United States section.....	28
Palace of varied industries	18
Pedagogy section	168
University exhibit.....	46
View of entrance to	10
Education:	
Archæological explorations, exhibit of.....	124
England's exhibit in university section	66
Higher, view of installation	90
Primary section, French exhibit, city of Paris building.....	150
Secondary, drawings.....	142
Secondary, view of installation	160
Superior, view of installation.....	98
Fine arts, view of installation	358
Forestry and fisheries, view of installation	230
Furniture and decorations, varied industries section	332
Furniture exhibit, varied industries section	312
Iron and steel exhibit, mining and metallurgy section	298
Liberal arts, view of entrance to façade	208
Locomotive exhibit in railroad building.....	266
Machinery exhibit in United States machinery annex, bois de Vincennes...	278, 290
Machinery palace, general view in.....	82
Machinery section, exhibit of conveying belt.....	344
Naval exhibit of the United States:	
Model battle ships.....	250
Models of cruisers and gunboats	196
View of installation	240
New York Times composing room, publishers' building, view of installation.	134
Pollock prize exhibit, plan of installation of.....	186
Publishers' building:	
View of interior.....	74
View of exterior.....	116
Seine River, the, looking west from Alma Bridge.....	4
Sousa and his band in the Esplanade des Invalides	350
United States Geological Society, headquarters of, in mining and metallurgy space.....	218
United States national pavilion, view of a room in.....	106
United States post-office exhibit, models showing methods of transportation of mails.....	36
Varied industries section:	
East aisle	322
Façade	176



INDEX TO CATALOGUE.

	Page.		Page.
Abbey, Edwin Austin.....	241	Agricultural Commission, Louisi-	
Abbey & Imbrie	347	ana.....	411
Abbot, Frederic V	293	Agricultural Experiment Station:	
Abbot, Katherine G.....	242	Alabama.....	306, 324
Abbott, A.....	355	Alaska.....	308
Abbott Electrical and Manufactur-		Arizona.....	306, 308
ing Co.....	289, 291	Arkansas	306
Abbott, Samuel W	416	California.....	306
Abbott, M. J.....	308	Colorado.....	306
Aberfoyle Manufacturing Co	399	Connecticut.....	306
Abernathy, J. E.....	308	Delaware	306
Abild, Hans	308	Florida	306
Abney, Z.....	324	Georgia	324
Acheson, E. C.....	289, 355	Idaho	306
Ackeman & Tuftley.....	308	Illinois.....	306
Acme Machinery Co.....	284	Indiana.....	306
Acme Mining Co	355	Iowa	306
Adams, A. P., & Co	352	Kansas	306
Adams-Bagnall Electrical Co	289	Kentucky.....	306, 308
Adams Cotton Co	324	Maine	306
Adams, Eva E	394	Maryland	306, 308
Adams, F.....	355	Massachusetts.....	308
Adams, Fanny R.....	400	Minnesota	306
Adams, Herbert B.....	238	Missouri.....	306
Adams, J. W.....	355	Mississippi.....	306, 324
Adams, Thomas J	398	Montana.....	306
Addison, J. C	324	Nebraska	306
Addleman, Dill	334	New Hampshire.....	306
Addressograph Co	262	New Jersey.....	307
Adek Manufacturing Co.....	279	New Mexico	307, 308
Adger, Joseph E	324	New York	307
Adkins, William	324	North Carolina.....	307
Adrian, Platt & Co	304	North Dakota.....	307, 308
Advance Coal Co.....	301	Ohio	307
Advance Gin and Mill Co.....	324	Oklahoma.....	307
Advance Packing and Supply		Oregon	308
Co	280, 287	Pennsylvania	307, 308
Advance Publishing Co	266	Nevada	307
Aermotor Co	304	Rhode Island	307
Afterthought Mining Co.....	355	South Carolina.....	307
Agricultural College and Mechan-		South Dakota	307
ical Institute	241, 416	Storrs, Conn	307
Agricultural College of Oregon....	324	Tennessee	307

Agricultural Experiment Station—		Page.
Continued.		
Texas	307	
Utah	307	
Vermont	307	
Virginia	307	
Washington	307, 308	
West Virginia	307	
Wisconsin	307	
Wyoming	307	
Aiken, W.	308	
Aikman, Walter M.	255	
Aitken, Peter	255	
Ajax Mining Co.	355	
Alabama Consolidated Iron and Coal Co.	355	
Alabama Handbook	407	
Alabama Land and Development Co	411	
Alabama Mining Co	355	
Alaska Agricultural Experiment Station	308	
Alaska Packers' Association	349	
Albany Business College	241	
Albany Female Academy	237	
Albaugh-Georgia Orchard Co	332	
Alberene Stone Co	355	
Albertz, Ferdinand	352	
Albro, E. D., & Co	341	
Aldredge, W.	308	
Aldrich, H. A.	334	
Alexander, John W.	242	
Alexander, L. L.	355	
Alexander Mining Co.	355	
Alexander, William D.	324	
Alexander & Co	416	
Allegheny Quarries	355	
Alleman, A	301	
Allen, Edward E.	418	
Allen, Frederick S	301	
Allen, J. P.	355	
Allen, R. B	324	
Allen, S. L., & Co	305, 332	
Allen, Thomas	242	
Allen, W. J.	308	
Alliance Milling Co.	349	
Allington & Curtis Co	282	
Allis, Edward P., Co	297	
Allison, S. B	324	
Allouez Mineral Springs Co	416	
Almiral	260	
Almond, Thomas R	284, 289	
Almshouse, Massachusetts State ..	418	
Alpine Plaster and Cement Co.	355	
Alps Mining Co	355	
Alsop, Mr.	334	
Alters, John	334	
Altman, J.	308	
Altoona Coal and Coke Co	355	
Altoona Quicksilver Mining Co.	355	
Aluminum World	407	
Alvin & Co	405	
Alvord, J.	355	
Amador Mining Co	355	
Amador Sandstone Co	355	
Ambler Asbestos Air Cell Cover- ing Co	280	
American Academy of Political and Social Science	414	
American Adjustable Folding Chair Co	392	
American Aristotype Co.	265	
American Arithmometer Co.	277	
American Baptist Publishing So- ciety	266	
American Bee Journal	407	
American Bicycle Co. (entered under factory names)		
American Book Co	235,	
	237, 238, 240, 241	
American Brewing Co	354	
American Building Association "News"	407	
American Car and Foundry Co ...	297	
American Car Co	297	
American Car Sprinkler Co.	292	
American Cereal Co	308, 349	
American Clay Working Machin- ery Co	394	
American Climatological Associa- tion	416	
American Coal Mining Co	355	
American Commercial Rubber Co.	287	
American Condensed Milk Co.	322	
American Cotton Oil Co	324	
American Druggist Publishing Co.	266	
American Economic Association ..	414	
American Electric Heater Co.	291	
American Electric Novelty and Manufacturing Co	289	
American Electric Specialty Co.	289, 291	
American Electric Telephone Co.	290	
American Electric Vehicle Co	295	
American Electrician Co	266	
American Encaustic Tile Co.	394	
American Excelsior Consolidated Mining Co	355	

	Page.		Page.
American Fashion Co.....	398	American Seaman's Friend Society	266
American Federationist.....	407	American Separator Co.....	305
American Federation of Labor..	407, 413	American Shearer Manufacturing	
American Felt Co.....	279	Co.....	405
American Florist Co.....	266	American Shipbuilder.....	266
American Ginning Co.....	324	American Shipping Blue Book...	407
American Graphophone Co.....	279	American Ship Windlass Co.....	422
American Hard Fiber Co.....	287	American Sick Journal.....	407
American Hard Rubber Co.....	278	American Society Prevention of	
American Hoist and Derrick Co..	292	Cruelty to Animals.....	266, 414
American Homes Publishing Co..	266	American Society of National Ad-	
American Hosiery Co.....	401	vertisers.....	262, 266
American Humane Education So-		American Steam Gauge Co.....	280
cietiy.....	414	American Steam Packing Co.....	281
American Humane Society.....	414	American Steel and Iron Manu-	
American Injector Co.....	280	facturing Co.....	390
American Institute Mining Engi-		American Steel and Wire Co.....	279,
neers.....	355	290, 297, 289, 390	
American Investments.....	407	American Steel and Wire Co. of	
American Journal of Insanity...	421	New Jersey.....	355
American Kaolin Co.....	355	American Steel Barge Co.....	301
American Lead Pencil Co.....	404	American Steel Hoop Co.....	389
American Library Association....	238	American Supply Co.....	401
American Lumberman.....	407	American Three Color Co..	263, 265, 267
American Lutheran Publishing		American Tin Plate Co.....	389, 390
Board.....	266	American Tool and Machine Co..	284
American Machinery Co.....	284	American Turret Lathe Works...	284
American Machinist Press.....	266	American Type Founders' Co....	263
American Manufacturer and Iron		American Waltham Watch Co...	412
World.....	307	American Wireless Telegraph	
American Medical Association....	266	Co.....	290
American Mining Co.....	355	American Woven Wire Brush	
American Museum, Natural His-		Co.....	287
tory.....	237, 347	American Wringer Co.....	398, 406
American Net and Twine Co.....	347	American Writing Machine Co...	263
American and Nettie Mining Co..	355	American and Nettie Mining	
American Newspaper Directory..	266	Co.....	355
American Newspaper Reporter...	407	Ames, J. O.....	349
American Numismatic and Arch-		Ames, Mrs.....	406
æological Society.....	238, 277	Amespaugh, Vivian.....	394
American Optical Co.....	277, 397	Amsden, C. S.....	308
American Peace Society.....	266	Anable, I. M.....	308
American Pipe Manufacturing Co..	293	Anaconda Coal Mining Co.....	355
American Pneumatic Service Co..	292	Anamosa Quarries.....	355
American Postal Machine Co.....	262	Ancient Order Hibernians.....	413
American Public Health Associa-		Ancient Order United Workmen.	414
tion.....	416	Anderson, A. A.....	242
American Radiator Co.....	397	Anderson, Albert and J. M., Man-	
American Roller Bearing Co.....	295	ufacturing Co.....	287
American Saddle Co.....	296	Anderson Brothers.....	400
American School Board Journal..	235, 237	Anderson, H.....	289, 290
American School Furniture Co..	236,	Anderson, L. L.....	324
237, 238, 392		Anderson, O. M.....	349

	Page.		Page.
Anderson, P., jr.....	308	Ashton Valve Co.....	281, 397
Anderson, T. O.....	308	Aspinwall Manufacturing Co.....	305
Andreas, F. G.....	308	Association Agricultural Colleges and Experiment Stations.....	307
Andrew, Thomas H.....	267	Association Collegiate Alumnae...	238
Andrews, A. H., Co.....	280	Association Engineering Societies..	412
Andrews, Col. A.....	355	Assyrian Gilsonite Co.....	356
Andrews, Jacques & Rantoul.....	260	Astor, John Jacob.....	301
Angel Island Stone Co.....	355	Atchison, Topeka and Santa Fe Railroad.....	407
Angel's Mining Co.....	356	Atherton, W. P.....	334
Angus Sinclair Co.....	267	Atkins, E. C. & Co.....	284, 390
Anker Manufacturing Co.....	349	Atkinson, J. H.....	308
Annin & Co.....	393	Atkinson, W. B.....	416
Ansley, M.....	334	Atlan Club.....	394
Ansonia Brass and Copper Co....	389	Atlanta University.....	414
Anthony, E. and H. T., & Co.....	267	Atlantic Coast Line.....	411
Apollo Iron and Steel Co.....	412	Atlantic Refining Co.....	402
Appetts, William, Sons.....	324	Atlantic Yacht Club.....	301
Appleton, T.....	297	Atlas Mining Co.....	356
Apperson, R. W.....	308	Atlas Tack Co.....	390
Arable Cement Co.....	401	Attleboro Jewelry Co.....	405
Arawani Mills.....	406	Attleboro Manufacturing Co.....	405
Architectural Record.....	412	Atwater, W. O.....	347
Argillo Works.....	356, 389	Auditor, West Virginia.....	297
Arkansas Anthracite Coal Co.....	356	Audubon Park Association.....	332
Arizona Lumber and Timber Co..	407	Auerbach, Louis.....	401
Arlington Heights Fruit Co.....	334	Auld & Conger.....	356
Arlington Mills.....	399	Aulich, F. B.....	394
Armour & Co.....	267, 322, 348, 350, 402	Aull, Elbert H., Co.....	267
Armour Fertilizing Works.....	304	Aultman, Miller & Co.....	304, 399
Armour Packing Co.....	350, 402	Automatic Electric Clock Co.....	405
Armstrong Brothers Tool Co.....	284	Avonmore Coal and Coke Co.....	356
Armstrong, Charles.....	356	Axtell, F. H.....	334
Armstrong, D.....	356	A. Y. and Minnie Mining Co.....	356
Armstrong, H. & S.....	356	Ayers, N. W., & Co.....	267, 407
Armstrong, Wheeler.....	356	Ayres, A.....	308
Arnim, B. F.....	324	Azure Mining Co.....	405
Arnold, Mrs. W. A.....	301	Babb, Cook & Willard.....	260
Arroyo Grande Stone Co.....	356	Babbitt, B. T.....	402
Art Department, Newcomb Col- lege.....	394	Babcock, E. F.....	334
Arthur, W. A., & Co.....	324	Babcock Printing Press Manufac- turing Co.....	263
Art Joinery.....	279	Babcock & Wilcox Co.....	297, 422
Art Students' League.....	240	Bachelor, F.....	356
Asbury, Leonore.....	394	Bachelor Mining and Milling Co..	356
Asch & Jaeckel.....	346, 400	Baer, William J.....	242
Ashcroft Manufacturing Co.....	297	Bagg, S. F.....	301
Ashpoo Fertilizer Co.....	304	Baggley, John.....	356
Ashford, W. R.....	324	Bagwell, N. E.....	308
Ashland Coal, Iron and Railway Co.....	356	Baier, Phil. M.....	334
Ashley, D. G.....	308	Bailey, Charles A.....	356
Ashley Falls Marble Co.....	356	Bailey, Frank.....	334
Ashlock, William.....	334		

	Page.		Page.
Bailey, Henry	240	Banking, Commission of, Pennsyl-	
Bailey, J. J	356	vania	407
Bailey, J. S	324	Bankinson, W. S	324
Bailey, Jacob	334	Banner, Newton	334
Bailey, J. W	334	Banning Co	356
Bailey, M. M	308	Banning Orthopedic and Mechan-	
Baine, J. F	334	ical Therapeutic Co	278
Baird, A	308	Baptist Mining Co	356
Baird, Henry Carey, & Co	356	Barataria Canning Co	350
Baisley, Mrs. Frank	394	Barbee, J. Y	324
Baker Art Gallery	265	Barber, A. C., Manufacturing Co ..	397
Baker Brothers	284	Barber Asphalt Paving Co	356
Baker, Charles	356	Barber Jewelry Co	405
Baker, Constance A	394	Bardeen, C. W	235, 237, 239
Baker, G	334	Barker, J. M	356
Baker, G. G	308	Barker, L. D	309
Baker, I. P	308	Barley, U. S	334
Baker, J. W	309	Barlow, J. Noble	242
Baker, Martha S	242	Barnard, E	356
Baker, Sam	324	Barnard, George Grey	258
Baker, Theodore	309	Barnard, George, & Co	346, 406, 407
Baker, Walter, & Co	351	Barnes, A. S., & Co	267
Baker, W. W	308	Barnes, E. F	309
Baker & Chapman	324	Barnes, W. F. & John, Co	284
Baker & Fox	289	Barnett, R. C	309
Baldwin, A	309	Barney Marble Co	356
Baldwin, A. H	347	Barnhart Bros. & Spindler	263
Baldwin, A. M	356	Barnhorn, Clement J	258, 280
Baldwin Brothers & Co	393	Barper, William Gordan	324
Baldwin, C. A	352	Barr, G. W	350
Baldwin, D. H., & Co	279, 293	Barr, J. Carroll	292
Baldwin Locomotive Works	297	Barr-Fyke Cancelling Machine Co ..	263
Baldwin, M. A	334	Barrett, J	356
Baldwin Piano Co	279	Barrie, George, & Sons	263, 267
Ball Engine Co	281	Barry, J	334
Ball and Pedal Factory	296	Barry Postal Supply Co	263
Ballard, Martin & Nevills	356	Barsom, P. S	309
Ballard & Martin	356	Barteldes & Co	309
Ballardvale Mills	399	Bartholomew, J. S	301
Baltimore Leaf Tobacco Associa-		Bartlett Mineral Water Co	416
tion	403	Bartlett, Paul W	258
Baltimore and Ohio Relief Associa-		Barton Estate Co	352
tion	414	Bashford & Ferguson	356
Baltz, J. & P., Brewing Co	354	Bass, E. I	309
Bandera Flagstone Co	356	Bass, J. A	309
Bangor and Aroostook Railroad ..	407	Bassett, W. A	334
Banister, James A., Co	401	Batcheller Pneumatic Tube Co ...	282
Bank Commission of Maine	407	Batchford, E. W., & Co	309
Bank Commissioners New Hamp-		Bates, Linden W	292
shire	407	Bates, R	324
Bank Report (Cal.)	407	Bates & White	324
Bankers' Mining Co	356	Bathamy Worsted Co	393

	Page.		Page.
Bath Department, Boston.....	416	Belding, Milo M.....	357
Bath House Committee, Brook- line, Mass.....	416	Belknap Motor Co.....	287
Battle Creek Sanitarium Health Food Co.....	349	Belknap, W. E.....	293
Battle, M. J.....	324	Bell, A. W.....	416
Battle, R. B.....	324	Bell, David K.....	334
Battle & Co.....	402	Bell, E. P.....	309
Baugh, J. W.....	309	Bell, J. C.....	324
Baur, Theodore.....	406	Bell, T. J.....	357
Bausch & Lomb Optical Co.....	265	Bell, W. W.....	324
Baxter, C. W.....	324	Bell & Moore.....	324
Baxter, J. R.....	309	Belle Louise Ranch.....	334
Baxter, Martha Wheeler.....	242	Bellefontaine Cemetery.....	332
Bayle & Lacosta.....	304	Bement, Miles & Co.....	284
Bay State Optical Co.....	277, 397	Bendat, L.....	324
Bay State Seam Face Granite Co.....	356	Benecke, E.....	309
Beach, Martha Edwards.....	394	Benjamin, W. E.....	267
Beadleston & Woerz.....	354	Ben Lomond Wine Co.....	352
Beal, William.....	356	Benn, John.....	347
Bean, Barton A.....	347	Benning, John.....	334
Bean, Tarleton H.....	324, 341, 347	Bennett & Millet Co.....	309
Bean-Chamberlain Manufacturing Co.....	402	Benson, Frank W.....	242
Beard, C.....	356	Benson, Oliver.....	301
Beard, John L.....	352	Bentley, H. L.....	309
Beardsley, George F.....	356	Benton, Frank.....	332
Beardsley's, J. W., Sons.....	350	Benton, J.....	357
Bear Lithia Water Co.....	416	Benton, S. M.....	324
Beasley Mining Co.....	356	Benz, August.....	267
Beatty, H. C.....	309	Berea College, Kentucky.....	241
Beatty, John.....	356	Berg, Charles I.....	260
Beaux, Cecilia.....	242	Bergfeldt, N. H.....	301
Beaver Hill Coal Co.....	356	Bergstresser, J. C.....	267
Beck, C. J.....	356	Beringer Brothers.....	352
Beck, E. S.....	278	Berlin Iron Bridge Co.....	293
Beck, Joseph, & Co.....	354	Bernheim Brothers.....	354
Beck, W. H.....	309	Bernstrom, Victor.....	255
Beck, W. S.....	324	Berry Brothers.....	334
Becker, John.....	284	Berry, M. F.....	334
Becker-Brainerd Milling Machine Co.....	284	Berry, J. L.....	325
Beckington, Alice.....	242	Berry, T. L.....	357
Beckwith, J. Carroll.....	242	Bertha Blake Mining Co.....	357
Beckwith, P. D., Estate of.....	397	Bertha Zinc and Mineral Co.....	357
Bedell, E. I.....	324	Bertha Zinc Co.....	357
Beebe, Grace F.....	394	Berwind, White Coal Co.....	357
Beer, S. J.....	334	Bethesda Mineral Spring Co.....	354, 416
Beeson, H. H.....	309	Bethlehem Steel Co.....	301, 389, 421
Beil & Mauch.....	392	Bettelheim, E. S.....	267
Belcher Mining Co.....	356	Betzler, H.....	309
Belden Mining Co.....	357	Beveridge, Miss Kühne.....	258
		Bevis Rock Salt Co.....	357
		Beyer, George.....	325
		Bickford & Bennett.....	357
		Bickford Drill and Tool Co.....	284
		Bicycle Step Ladder Co.....	393

Page.		Page.	
Bien, Julius, & Co.....	347	Bliss, L. C., & Co.....	401
Bierbrier, F. E.....	393	Block, E.....	357
Biers, Rev. J. T.....	325	Block, H.....	309
Biesscker, J. S.....	305	Bloom, J. D.....	278
Biggs, B. D.....	309	Blossom, J. A.....	357
Bilgram, Hugo.....	282	Blow, Susan E.....	235
Billings Farm.....	325	Blum, Robert.....	243
Billings & Spencer Co.....	284	Blume, I.....	309
Bill, Edward Lyman.....	267	Blumenberg Press.....	267
Bimberg, Joseph.....	403	Blumenstiel, Levi, & Co.....	403
Binney & Smith.....	402	Blythe, Robert.....	334
Binns, Charles Fergus.....	357	Board of Arbitration:	
Binson, William E.....	325	Connecticut.....	407
Birge, F. E.....	357	Illinois.....	407
Birmingham, Ernest F.....	267	Indiana.....	407
Birney, T. L.....	357	Massachusetts.....	407
Bisbing, H. S.....	242	New York.....	408
Bischoff, Franz A.....	394	Ohio.....	408
Bishop, Joseph.....	357	Wisconsin.....	408
Bishop, M. A.....	324	Board of Education:	
Bishop, T. F.....	357	Albany, N. Y.....	235, 237
Bishop & Co.....	351	Binghamton, N. Y.....	235
Bismark Mining Co.....	357	Boston, Mass.....	235, 237, 241
Bissell Carpet Sweeper Co.....	406	California State.....	235, 237
Bissell, George E.....	406	Chicago, Ill.....	235, 237
Bitter, Karl.....	258, 392, 406	Cleveland, Ohio.....	235, 237
Bituminous Rock Co.....	357	Denver, Colo.....	235, 237
Biwabik Mining Co.....	357	Erie, Pa.....	235
Bixby, J. F.....	357	Galesburg, Ill.....	235
Black Metal Mining Co.....	357	Kansas City, Mo.....	235
Black, Smith & Given.....	357	Los Angeles, Cal.....	235
Black, William H.....	334	Malden, Mass.....	235, 237
Blackford, C. M., jr.....	347	Massachusetts State.....	235, 237
Blacksmith & Wheel Works.....	407	Middletown, N. Y.....	235
Blackstock, J.....	309	Minneapolis, Minn.....	235, 238
Blair Fountain Pen Co.....	404	Nashua, N. H.....	235
Blair, George A.....	334	Newark, N. J.....	235, 238
Blake, George F., Manufacturing Co.....	281, 422	New Bedford, Mass.....	235
Blake, P.....	357	New York City.....	235, 238
Blakelock, Ralph A.....	242	Omaha, Nebr.....	235, 238
Blakely, L. M.....	334	Paterson, N. J.....	235
Blakeney, J. C.....	325	Pensacola, Fla.....	235
Blanc, A.....	357	Peoria, Ill.....	235
Blanchard & Folsom.....	325	Rhode Island State.....	235
Blanding, Louis.....	357	Rochester, N. Y.....	235
Blaney, Henry R.....	255	St. Louis, Mo.....	236, 238
Blank, N. J.....	309	Saratoga Springs, N. Y.....	235
Blatz, F. J., & Brother.....	403	Somerville, Mass.....	235, 237
Blevins, N. J.....	309	Springfield, Mass.....	236, 238
Blichert, P. A., Manufacturing Co.....	402	Tacoma, Wash.....	236
Blickensderfer Manufacturing Co.....	263	Terre Haute, Ind.....	236
Blind, Institute for Instruction...	418	Toledo, Ohio.....	236
		Utica, N. Y.....	236

	Page.		Page.
Board of Education—Continued.		Board of Health—Continued.	
Vermont State	238	South Carolina State.....	417
Washington, D. C.....	236, 238	Vermont State	417
West Springfield, Mass.....	236	Washington, D. C.....	417
Whitehall, N. Y.....	236	Wisconsin State	417
Wilkesbarre, Pa.....	236	Worcester, Mass.....	417
Worcester, Mass.....	236, 238	Board of Park Commissioners,	
Board of Health:		Cambridge, Mass.....	293
Baltimore, Md	416	Board of School Directors, Harris-	
Boston, Mass.....	416	burg, Pa.....	236
Brooklyn, N. Y.....	416	Board of Schools, New York	397
Buffalo, N. Y.....	416	Board of Street Commissioners,	
California State.....	416	Cambridge, Mass.....	293
Cambridge, Mass.....	416	Boards of Trade:	
Charleston, S. C.....	416	Chicago.....	408, 414
Chicago.....	416	Lynchburg, Va.....	408
Cincinnati, Ohio.....	416	New Orleans	309
Cleveland, Ohio.....	416	Philadelphia	274
Connecticut State.....	416	Tampa, Fla.....	408
Delaware State	416	Washington, D. C.....	408
Detroit, Mich.....	416	Boehmke, Emil	309
Florida State	416	Boettcher, H.....	352
Illinois State	416	Bogart Mining Co.....	357
Indiana State	416	Bogart, O. H.....	357
Iowa State	416	Bogert, George H.....	243
Kansas State	416	Boggs, George A.....	334
Kentucky State	416	Bogwell, Hardy B.....	325
Maine State	416	Bohm, Max.....	243
Maryland State	416	Bohmann, Joseph	280
Massachusetts State	416	Bohn, H. J., & Bro.....	267
Michigan State	417	Boldt, H. J.....	278
Milwaukee, Wis.....	417	Bolen & Bryne Manufacturing	
Minneapolis, Minn.....	417	Co.....	354
Minnesota State	417	Boller, Alfred P.....	293
Missouri State.....	417	Bolles, C. E.....	265, 301
National, Washington, D. C..	417	Bolton, W. E.....	267
Newark, N. J.....	417	Bommer Brothers	390
New Hampshire State	417	Bond, A. L.....	357
New Jersey State.....	417	Bonnard, H., Bronze Co.....	406
New Orleans, La.....	417	Bonelli, D.....	357
New York City.....	417	Bonner's, Robert, Sons	267
New York State	417	Bookkeeper Publishing Company,	
Ohio State	417	Limited	267
Oklahoma	417	Booraem, R. E.....	357
Paterson, N. J.....	417	Booth Brothers and Hurricane Isle	
Pennsylvania State	417	Granite Co.....	357
Philadelphia, Pa.....	417	Booth, J. B.....	325
Pittsburg, Pa.....	417	Borden's Condensed Milk Co.....	322
Providence, R. I.....	417	Borglum, Solon H.....	258
Rhode Island State	417	Boring & Tilton	260
Reading, Pa.....	417	Boskerck, Robt. W. Van.....	243
St. Louis, Mo.....	417	Boss, Theodore	334
St. Paul, Minn.....	417	Boston Blacking Co.....	398

	Page.		Page.
Boston Flint Paper Co	357	Brandt-Dent Co	277, 405
Boston Little Circle Co	357	Brandywine Granite Co	358
Boston Quicksilver Mining Co	357	Brant, C. E	392
Boston Terminal Co	293	Brashear, John A	277
Boston Transit Commission	294	Braughton, Joseph T	325
Boston and Aurora Mining Co	357	Braun, W	358
Boston and Colorado Smelting Co	357-389	Braverman, M	358
Boston and Colorado Smelting and Refining Co	389	Brazanovich, M	358
Boston and Montana Consolidated Copper and Silver Mining Co	357	Brazil Block Coal Co	358
Boston and Nevada Co	357	Bream, Samuel	334
Botany Worsted Mills	399	Breazeale Brothers	325
Bouchelle, E. F	325	Breds, J. Ernest	325
Bouillon Stock Manufacturing Co	350	Breckenridge, Hugh H	243
Bourne, Charles	357	Bremer, A. R., Co	402, 403
Bowen, Clarence W	267	Bremer, Henry	334
Bowen, Daniel	358	Brenner, Victor David	258
Bowen Manufacturing Co	281	Brenner, W. N	265
Bowen, William M. P	263	Brewer, J. F	309
Bowers, A. G	309	Brewers' Journal	268
Bowker, R. R	267	Briar Block Coal Co	358
Bowles, F. T	301, 422	Briar Cliff Manor Farms	413
Bowles, J. M	267	Brice, A. H	325
Bowles, Ruder & Weber	309	Brick and Pipe Co	358
Bowsher, N. P	284	Bridgeport Gun Implement Co ...	284
Boyd, John F	358	Bridgeport Wood Finishing Co ..	341, 392
Boyd, Myra	394	Bridgeport Silk Co	400
Boyd's Directory, first volume ...	408	Bridgman, F. A	243
Boyle, J. J	406	Bright, W. H	334
Boyle, Patrick F	301	Brill, J. G., Co	297
Bracken, Julia M	406	Brindle Steer Mining Co	358
Braddock Land and Granite Co ..	358	Bristol Co	282, 289, 291
Braden, B. T	325	Brite & Bacon	260
Braden, C. C	325	Brittain, Wesley	309
Bradford Mill Co	284	Broadway Chambers	292, 294
Bradley, J. Elmer	334	Broadway Publishing Co	268
Bradley & Son, Geo. H	334	Brokaw, W. Gould	301
Bradley, J. D	301	Brooklyn Daily Eagle	268
Bradley Pulverizer Co	292	Brooklyn Society for the Improve- ment of the Poor	420
Bradley, W. L	334	Brooks, Richard E	258
Bradly, Benjamin	334	Brooks, W. H	358
Bradstreet, H. C	309	Brooks, W. T	334
Bradstreet, W. C	309	Brotherhood of Locomotive Engi- neers	408
Brady, Florence H	400	Brotherhood Wine Co	352
Bragard, A	301	Brown, A	309
Brainerd, Shaler & Hall Quarry Co	358	Brown, Albert	334
Brand, A. F	278	Brown, A. N	334
Branday, F. C	268	Brown Bear Mining Co	358
Brandon Italian Marble Co	358	Brown's Sons, Chas	334
Brandt, Randolph	281	Brown, C. L	309
		Brown-Dake Mining Co	358
		Brown, E	358

	Page.		Page.
Brown, Elmer Ellsworth.....	238	Building and Loan Association—	
Brown, George L.....	358	Continued.	
Brown, Harold P.....	297	Nebraska.....	408
Brown, Herald.....	239	Ohio.....	408
Brown, J. G.....	243	Wisconsin State League.....	408
Brown, James B.....	358	Commission, New York State.....	408
Brown, J. J.....	309	Bullard Machine Tool Co.....	284
Brown, L.....	309	Bullion, Beck & Champion Co....	358
Brown, Morris.....	403	Bullion Mining Co.....	358
Brown, M. F.....	334	Bullock Electric Manufacturing	
Brown, Paul Taylor, Co.....	350	Co.....	287
Brown, R. H.....	334	Bullock, George.....	301
Brown, R. H., & Co.....	284	Bullock, M. C., Manufacturing Co..	358
Brown, William M., jr.....	294	Bumpus, H. C.....	347
Brown, T.....	358	Bunce, W. Gedney.....	243
Brown & Patterson.....	280	Bundy Manufacturing Co.....	405
Brown & Sharpe Manufacturing		Bunko Mining Co.....	358
Co.....	277, 284, 405	Burbank, E. A.....	243
Brown's Gas Directory.....	408	Burbank Engraving Co.....	402
Browne, Charles Francis.....	243	Bureau of American Republics .	268, 408
Brownell, F. H.....	413	Bureau of Charities, Wisconsin...	421
Browning, Elsie E.....	394	Bureau of Charities and Correc-	
Browning, J. A.....	309	tions, Rhode Island.....	421
Brownville Slate Co.....	358	Bureau of Charities, State of Kansas	421
Bruce, H. C.....	309	Bureau of Charities, State of Ne-	
Brumbaugh, J. N.....	309	braska.....	421
Bruner, T. K.....	334	Bureau of Education, United	
Brunswick-Balke-Collender Co .	393, 406	States.....	236, 241
Brush, George de Forrest.....	243	Bureau of Engraving and Printing.	263
Brush and Pencil Publishing Co..	268	Bureau of Indian Affairs, Depart-	
Bryan, J. L.....	309	ment Interior.....	241
Bryant, A., & Son.....	334	Bureau of Labor Commissioner:	
Bryant, T. W.....	325	Kansas.....	408
Bryn Mawr College.....	239	Washington.....	408
Buckeye Electric Co.....	289	Bureau of the Mint, U. S.....	277
Bucyrus Co.....	292	Buren, John J.....	309
Buffalo Charities Society.....	420	Burgdorf, S. E.....	334
Buffalo factory, American Bicycle		Burgeson, B. O.....	310
Co.....	296	Burgess, L. A.....	310
Buffalo Forge Co.....	284	Burgur, L. A.....	309
Buffalo Pitts Co.....	292	Burk, Frank.....	334
Buhl Stamping Co.....	305	Burke, J.....	358
Builders' Iron Foundry.....	284	Burnett, Charles.....	335
Building and Loan Association:		Burnett, J.....	310
California.....	408	Burnham, D. H.....	260
Illinois State League.....	408	Burns Mining Co.....	358
Indiana State League.....	408	Burpee, W. Atlee, & Co....	310, 332, 340
Iowa.....	408	Burr, John T., & Son.....	284
Massachusetts State League ..	408	Burrage, A. C.....	358
League, New York.....	408	Burrows, Miss M. E.....	394
Michigan State League.....	408	Burt Manufacturing Co.....	281
Missouri State League.....	408	Burton, C. H., & Co.....	280
Washington, D. C.....	408	Burton, George A.....	335

	Page.		Page.
Burton Photo Co	265	Campbell, J., Preserve Co	350
Burton-Hoffman Photo Co	301	Campbell, J. B.	268
Busk, Mrs. J. R.	301	Campbell Printing Press Manufac-	
Butler, Howard Russell	243	turing Co	263
Butterick Publishing Co	268	Campbell, Wm., & Co	392
Butterworth, T.	268	Campbell's (Ill.) Journal	268
Button, W.	358	Campion, John F	361
Buttrill, Thomas H.	325	Candler, Mariam L	394
Bybee, R. L.	310	Canfield Manufacturing Co.	281
Byers, N. S.	310	Canfield Rubber Co	401
Byrd, A. G.	325	Canty, John	325
Byrd, M. T.	325	Caperton, W. P.	325
Byron, Joseph	265, 280	Capital City Brick Co.	361
Cadwell, A.	335	Capps, T. W.	325
C. & C. Electric Co	287	Carborundum Co.	284, 361
Cagaloo Mining Co	358	Card, S. W., Manufacturing Co. ...	284
Cainbensy, Frank	301	Cardinal & Becker	400
Calaveras Consolidated Mining Co.	358	Carl, Kate	243
Calaveras Marble Co.	358	Carl, William C.	268
Calcots, Allen C.	325	Carleton, Clifford	243
Calder, A. S.	258	Carley, Horace L.	301
Caldwell, E. W.	310	Carlisle Indian School	241
Caldwell, L. H.	325	Carlock, W. J.	310
Caldwell, W. E., & Co.	294	Carneal, Thomas D.	310
Caledonia Mining Co	358	Carnegie Steel Co	389
Calhoun, A. A.	310	Carpenter, A. V.	361
California Art Glass Works	392	Carpenter, Coles A.	361
California Canneries Co., Ltd.	351	Carpenter, G. A.	310
California Fish Co.	350	Carpenter, J. M., Tap and Die Co.	284
California Fruit Grower	268	Carpenter, John W.	325
California Marble and Building		Carpenter & Bro.	361
Stone Co.	358	Carrall, J. C.	310
California Nursery Co	332	Carrara Marble Co	361
California Packing Co	310, 351	Carrere & Hastings	260
California Paris Exposition Com-		Carr, Lyell	392
mission, 1900	277, 294,	Carter, J. J.	325
	310, 332, 335, 341, 347, 350,	Carter, L. W.	310
	352, 358, 361, 389, 408, 414	Carter, Miss Sybl.	400
California Quicksilver Mining Co.	361	Carter, W. C.	301
California State Mining Bureau.	361	Carthage Marble and White Lime	
California Wharf House Co	310	Co	361
California Wine Association	352	Cartwright, M. T.	310
California Winery Co.	352	Cary, F. M.	325
Calla, Max, & Co.	268	Cary, Robert A.	325
Calliope Mining and Milling Co.	361	Casarallo, J.	361
Callison, J. W.	325	Cascade Mill	349
Calvert, John R.	335	Case Manufacturing Co	292
Calumet and Contact Co	361	Casey, T. F.	325
Calumet and Hecla Co.	361	Cashin, William J	361
Cambria Steel Co.	294	Cassell & Co., Limited	268
Camp, Joseph de.	243	Cassidy & Son Manufacturing Co.	398
Campbell, C. P.	361	Castillo, Ernest.	301
Campbell, L. H.	361	Castle Braid Co	400

	Page.		Page.
Castle Brothers	350	Chandler & Price Co.	263, 268
Castrer, Curran & Bullitt	361	Chaney, J. C.	310
Cathcart, S. M.	325	Chaney, J. R.	310
Catholic Standard and Times Pub- lishing Co.	268	Chapel Hill Mining Co.	362
Catron, J. T.	335	Chapin, W. C.	362
Cattell, James McKeen	239	Chaplin, R. W., jr.	325
Caw's Pen and Ink Co.	404	Chapman, Carlton T.	243
Cayuga Pressed Brick Co.	362	Chapman Coal Co.	362
Cemetery Association, Cypress Lawn.	417	Chapman, Max.	325
Cemetery, Forest Home Co.	417	Chapman Valve Manufacturing Co.	282
Cemetery, Spring Grove	332	Chapman, W. H.	301
Centennial Eureka Mining Co.	362	Chapple, Joe Mitchell	268
Centerville Block Coal Co.	362	"Charities"	421
Central Coal and Coke Co.	362	Charities and Correction, Board:	
Central Jellico Coal Co.	362	Colorado State	418
Central Lead Co.	362	District of Columbia	418
Central Phosphate Co.	301, 362	New Hampshire State	418
Central Railroad, New Jersey	362	National Conference, Cincin- nati	418
Central School Supply House.	236, 277	Charities, Associated, Board of:	
Central Seventh Day Adventist Publishing Association.	268	Massachusetts State	418
Central Tennessee College.	241	Janesville, Wis.	418
Century Co.	268, 346	Oakland, Cal.	418
Cercle Francaise de l'Universite Harvard	239	Pueblo, Colo.	418
Cereal Food Co.	349	Society, Charleston, S. C.	418
Cereal Machine Co.	349	Charleston, W. Va.	418
Cereal Mill, Akron, Ohio	349	Wilmington, Del.	418
Cerrillos Coal and Railroad Co.	362	*Charities, Association, Akron, Ohio	418
Cerro Gordo Co.	362	Charities, Board of:	
Chadbourn & Long	362	Connecticut State	418
Chadwick, Chas. Wesley.	255	Indiana State	418
Chaffin, T. J.	310	New York State	419
Chain Factory	296	Ohio State	418
Chainman Mining Co.	362	Tennessee State	419
Chaix & Bernard.	352	Public Board, Massachusetts State	418
Chamber of Commerce:		Public Board, North Carolina State	419
Los Angeles.	325, 408, 411	Pennsylvania State	419
Santa Ana	411	Charities Review	420
Chamberlain, D. S.	335	Charity and Beneficent Organiza- tion, Baltimore.	419
Chamberlain, E. E.	310	Charity, Board of:	
Chamberlain Publishing Co.	307	California State	419
Chambers, Inskeep & Co.	278, 397	Illinois State	419
Champion Milk Cooler	305	Maine State	419
Champion Mining Co.	362	Maryland State	419
Champney, Marie	243	Massachusetts State	419
Chandler, A. D.	268	Michigan State	419
Chandler, H. H., & Co.	268	Minnesota State	419
Chandler, John	335	New Jersey State	419
Chandler, R. C.	325		

	Page.		Page.
Charity Organization Society:		Chickamunga Coal and Coke Co ..	362
New York	421	Children's Aid Society:	
Connecticut.....	421	Boston	419
Colorado.....	421	New York	421
District of Columbia.....	421	Pennsylvania	419
Maine	421	Children's Hospital, Boston	419
Minnesota	421	Children's Institutions Depart-	
Chase, A. J.	348	ment, Boston.....	419
Chase, George W.....	362	Chilton, J. B.....	325
Chase, Howard A	335	China, Glass and Pottery World..	408
Chase-Shawmut Co.....	287	Chinn, R. L.....	325
Chase, William M.....	243	Chipman, N. P.....	335, 350
Chassaignac & Dyer, Drs.....	268	Chisholm, E. N.....	325
Chateaugay Iron Ore Co	389	Chisholm & Moore Manufacturing	
Chatelle, W. B.....	362	Co	297
Chaussegros, Clement.....	394	Chisler, G	362
Chauvin, A. T	362	Choctaw, Oklahoma and Gulf Rail-	
Chavez, J. M. C.....	310	way Co	362
Cherokee and Pittsburg Coal		Christensen Engineering Co.....	283
Co	362	Christian Publishing Association..	268
Cherry, Mrs. K. E	394	Christine, Mr	335
Cherry Valley Iron Co.....	362	Christy Fire Clay Co.....	362, 389
Chestatee Pyrites Co.....	362	Christy, Howard Chandler.....	244
Chesterton, A. W., & Co.....	281	Church, F. S.....	244
Chiatovich, J	362	Church, W. C. & F. P	268
Chiatowitch, John.....	362	Churchman Co.....	268
Chicago Art Institute	240	Cincinnati Belle Mining Co	362
Chicago Auditorium Association..	280	Cincinnati Leaf Tobacco Ware-	
Chicago Brass Co.....	280	house Co.....	403
Chicago, Burlington and Quincy		Cincinnati Milling Machine Co...	285
Railroad	414	Cincinnati Planer Co.....	285
Chicago Colortype Co.....	263, 265	Cinnabar King Mining Co.....	362
Chicago Dry Goods Reporter.....	408	Circular Loom Co	287
Chicago Edison Co	289	City Improvement Co.....	362
Chicago Flexible Shaft Co.....	304	Clafflin University	241
Chicago Fuse Wire and Manufac-		Clapp, A. R.....	325
turing Co	289	Clark, A. C., & Co.....	278
Chicago Handle-Bar Co.....	296	Clark, Charles L.....	268
Chicago Horseman Newspaper Co.	268	Clark, D	310
Chicago Northwestern Railway...	408	Clark, George M., & Co.....	397
Chicago Pneumatic Tool Co.....	285	Clark, J. C., M. D.....	278
Chicago Rawhide Manufacturing		Clark, James, jr., & Co	287
Co	283	Clark, John G	325
Chicago Record	408	Clark, M. H., & Bros	403
Chicago Relief Society	420	Clark, Merritt M	335
Chicago, Rock Island and Pacific		Clark, N., & Sons	362
Railway	297	Clark, W. A	362
Chicago Sanitary District.....	294	Clark, Walter	325
Chicago Time Register Co.....	405	Clark, Walter	244
Chicago University	362	Clark, Walter Appleton.....	244
Chicago, Wilmington and Vermil-		Clarke, F. G., Blue Stone Co.....	362
ion Coal Co	362	Clarke, I. E.....	240
Chicago Writing Machine Co.....	263	Clarke, William	325

	Page.		Page.
Clarksville Cider Co.....	351, 354	Colgate & Co.....	403
Clas.....	261	Collin, L. L.....	325
Clay, Henry, & Bock & Co.....	403	Collamer, J. B., & Son.....	335
Clemons, L. W.....	310	Collective forestry exhibit.....	341-346
Clerk de Landresse, H.....	362	Colliery Engineering Co.....	268
Cleveland Axle Manufacturing Co.....	296	Collins, R. M.....	363
Cleveland, Clement, M. D.....	278	Collins, W. A.....	325
Cleveland Cliffs Mining Co.....	362	Collins, W. E.....	325
Cleveland Crane and Car Co.....	292	Colliver, R.....	310
Cleveland Factory.....	296	Colman, N. J.....	363
Cleveland Hardware Co.....	413	Colman, W. E.....	310
Cleveland Machine Screw Co.....	296	Colorado Central Mining Co.....	363
Cleveland Mining Co.....	362	Colorado College.....	363
Cleveland Rubber Works.....	281	Colorado Fuel and Iron Co.....	363, 389, 390
Cleveland Stone Co.....	362	Colorado Scientific Society.....	363
Cleveland Terminal and Valley Railroad relief department.....	413	Colored American.....	414
Cleveland Twist Drill Co.....	285	Colored Industrial Institute.....	241
Clevenger, C. E.....	310	Columbia Cordage Co.....	399
Click, W. W.....	310	Columbia Encaustic Tile Co.....	394
Clinedinst, B. West.....	244	Columbia Factory.....	296
Clinton Mining and Milling Co....	362	Columbia Incandescent Lamp Co.....	289
Clippert & Spaulding.....	362	Columbia Marble Quarry Co....	363, 392
Clissold, H. R.....	268	Columbia Mining Co.....	363
Clohan, Alex.....	335	Columbia Phonograph Co.....	280
Clonbrock Steam Boiler Co.....	281	Columbia Safety Steamship Co....	301
Clore, L. B.....	310	Columbia Spectator.....	239
Clough, Rockwell, Co.....	285	Columbia Typewriter Manufactur- ing Co.....	263
Cluett, Peabody & Co.....	401, 408	Columbia University.....	239, 268
Chulow, P. T.....	292	Columbia and Electric Vehicle Co.....	296
Coal Bluff Mining Co.....	363	Columbian Marble Quarrying Co.....	363
Coal Creek Coal Co.....	363	Columbian Mining Co.....	363
Coal Ridge Coal and Coke Co.....	363	Columbus Buggy Co.....	296
Coale Muffler and Safety Valve Co.....	281	Columbus Face Brick Co.....	408
Coates Bros.....	325	Columbus Factory.....	296
Cobb, Benjamin F.....	268	Columbus and Hocking Coal and Iron Co.....	363
Cobb, J. I.....	301	Coman, Charlotte B.....	244
Cock Robin Mining Co.....	363	Comet Coal Co.....	363
Coes, L., Wrench Co.....	285	Commercial Club, Dayton, Ohio..	310
Coffey, George W.....	335	Commercial Club, Topeka, Kans..	
Coffey, Thos. A.....	335	Commercial Electric Co.....	287
Coffin, William A.....	244	Commercial Museum.....	325
Coffin & Leighton.....	285	Commissioner of agriculture, Lou- isiana.....	408
Cohn, S., & Son.....	325	Commodore Mining Co.....	363
Coins, J. N.....	310	Commonwealth Cotton Manufac- turing Co.....	326
Colby, Clara Bewick.....	268	Commonwealth Mining and Mill- ing Co.....	363
Colby, L.....	335	Compere, C. V.....	363
Colcord, R. K.....	363		
Coldwell Lawn Mower Co.....	332		
Cole, Frank B.....	268		
Cole, Lillie E.....	394		
Cole, Timothy.....	255		

	Page.		Page.
Comptroller of Currency, United States	413	Cooper, Emma Lampert	244
Comptroller of treasury, New Jersey State.....	297	Cooper Hollow Mining Co	363
Comstock, Cheney & Co.....	280	Cope & Stewardson.....	261
Comstock, Anna B.....	255	Copper Queen Consolidated Mining Co.....	363, 390
Conant, William Cowper.....	268	Copper Queen Mining Co	389
Concrete Gold Mining Co.....	363	Copper Union Creek Co.....	363
Cone, D. S	326, 335, 350	Copperopolis Mine	363
Cone, H	363	Coppock, D. M.....	310
Cone, Moses H.....	335	Corbly, A. L.....	310
Confectioners' Journal Publishing Co	269, 408	Corley, J. J.....	326
Conger Brothers.....	310	Corn Belt	411
Congress Gold Co.....	363	Corn Exposition of Peoria.....	310
Congressional Library	239	Corne, W. F	265
Conn, Fred	363	Cornell University.....	239, 298, 363
Conn, J. G.....	326	Cornelly, J. B.....	363
Connecticut Magazine Co	269	Cornetti, G. B	363
Connecticut State Pomological Society	335	Cornish & Co	305
Connor, Washington E	332	Cornish, Curtis & Greene Manufacturing Co	305
Conrad Hill Mining Co	363	Cornwall Mining Co	363
Conroy, B	363	Corona Coal and Coke Co	364
Consalvi, Icilio.....	280	Corporative Commission, North Carolina	298
Consolidated Bituminous Rock Co.....	363	Corporation Association:	
Consolidated Car Fender Co.....	297	Maine	412
Consolidated Car Heating Co.....	297	Massachusetts.....	412
Consolidated Coal Co	363	Michigan	412
Consolidated Rubber Tire Co.....	296	Minnesota	419
Consolidated Stanley Mining Co ..	363	Corrigan, McKinney & Co.....	364
Consolidated Virginia Mining Co ..	363	Cortland-Howe Ventilating Stove Co	397
Consolidation Coal Co	414	Cossit, Davis	326
Constant, Edward W	326	Cotton, W. W.....	310
Construction News, Chicago.....	408	Cottrell, C. B., & Sons Co.....	263
Consumptives, Massachusetts Hospital.....	419	Couglin, John	335
Consumptives, Seton Hospital....	419	Courtright, J.....	310
Continental Coal Co	363	Couse, E. Irving	244
Continuous Rail Joint Co	297	Cousino, I. C.....	310
Contracting Co	363	Coutts, D	310
Control, Board Iowa State Institutions	419	Cowan, R. T	311
Cook & Bernheimer Co	354	Cowen, Louise	394
Cook & Son, H.....	335	Cowles, Calvin J	364
Cook Mining and Milling Co	363	Cowles, Maud Alice	244
Cook, S. E.....	363	Cox, Abram, Stove Co.....	397
Cook, W. A.....	326	Cox, C. A.....	311
Coolidge, C. A., & Morin-Goustiaux	261, 294	Cox, E. S	335
Coontz, J. F., & Co.....	310	Cox, J. L.....	311
Cooper, G. W	310	Cox, Kenyon	244
Cooper, Ellwood	310, 332	Cox, Louise	244
		Coyne, Sally E	394
		Coyner, George A.....	335
		Craig, E. H	269

	Page.		Page.
Craig, John J., Co.....	364	Crown Point Mining Co.....	364
Craighead, W. A., & Sons.....	311	Crown Woven Wire Brush Co....	288
Craik, David.....	311	Crozet Fruit Growers' Associa-	
Crain, W. R.....	335	tion.....	335
Cram, Goodhue & Ferguson.....	261	Cruikshank, A. B.....	364
Cramsey, S.....	311	Crystal Salt Works.....	351
Crandall, E.....	311	Culberson, C. H.....	311
Crandall Packing Co.....	281	Culbertson, H. M.....	326
Crane, Anna B.....	394	Cullimane, J.....	311
Crane Brothers.....	402, 404	Cullman Brothers.....	403
Crane, Bruce.....	244	Culp, S. V. (Mrs.).....	394
Crane, Company.....	281, 283, 390, 397	Cummings, Robert A.....	294
Crane, W. W.....	311	Cumnock Mining Co.....	364
Cranston, J. F.....	311	Cunningham, John S.....	403
Crawford Factory.....	296	Cupertino Wine Co.....	352
Crawford, H. T.....	311	Cupigraph Co.....	402
Crawford, McGregor & Canby....	407	Curran, Charles C.....	244
Crawford, W.....	311	Currell, W. E.....	311
Crawshaw, C. R.....	301	Currie, J. W.....	326
Creager, William H.....	311	Currie, S.....	311
Cream of Lemon Co.....	403	Curtice Brothers Co.....	350, 351
Creamer, E. L., jr.....	311	Curtis, Constance.....	244
Crellin, Louis.....	352	Curtis, J. G.....	364
Cremation Co., The United States.	417	Curtis Publishing Co.....	269
Cremation:		Curtis, S. W.....	364
Davenport Society.....	417	Curtis, W. S.....	326
Massachusetts Society.....	417	Curtis & Cameron.....	265
Philadelphia Society.....	417	Curtis & Curtis.....	285
Crematory:		Cushman Chuck Co.....	285
Chicago.....	417	Cutter, W. H.....	364
Cincinnati.....	417	Cutting, upholstering, and jobbing	
Gardner Earl Chapel and Oak-		trade.....	408
wood Cemetery.....	417	Cycle Trade Publishing Co.....	269
The Le Moyne.....	417	Cytron, Otto.....	404
Crenshaw, J. G.....	311	Dabney, Charles W.....	240
Crescent Factory.....	296	Dadant, Charles, & Son.....	332
Crescent Steel Co.....	278, 389	Daggett, A.....	364
Cress, C.....	311	Daggett, J.....	364
Cresson, George V., Co.....	283	Dahl, A. P. R.....	311
Cribb, J. B.....	326	Daily Drivers.....	269
Criterion Publishing Co.....	269	Dairy Com., New Jersey.....	417
Crocker-Wheeler Electric Co.....	287	Dairy and Food Division, Michigan	
Crook, Russell G.....	394	State Department.....	417
Cross, Nellie A.....	394	Dairymen's Supply Co.....	305
Crosby Steam Gauge and V. Co....	298	Dairymen's Union.....	320, 350
Crosthwaite, C. W.....	311	Dale Electric Co.....	289, 291
Crothers, L. M.....	311	Dallin, Cyrus E.....	258
Crouse-Hinds Electric Co.....	288	Daly, Matt A.....	394
Crouse, J. N.....	269	Damon, A. L., Miss.....	394
Crow Brothers.....	326	Damon Mining Co.....	364
Crowell, J. P.....	364	D'Amour & Littledale.....	285
Crown King Mining Co.....	364	Dana Natural History Society....	239

	Page.		Page.
Danche, J.....	364	Delmas, A. G.....	335
Dannat, William T.....	244	Del Monte Milling Co.....	349
Danville Brick and Tile Co.....	364	Delta Cotton Co.....	326
Darling, W. M.....	244	Denison Milling Co.....	311
Darlot, Cyrus.....	301	Dennemora Mining Co.....	364
Daughters American Revolution, National Society.....	414	Densmore Typewriter Co.....	263
Daunet, J.....	364	Dental College, Philadelphia.....	278
Davenport, A. H.....	393	Dental department, University of California.....	278
Davidson, Harry.....	255-256	Dental department, University of Pennsylvania.....	278
Davidson Publishing Co.....	408	Dental department, Vanderbilt University.....	278
Davidson & Kennedy.....	364	Dental department, Western Re- serve University.....	278
Davis, A.....	311	Dental Surgery, College of, Chi- cago.....	279
Davis, Charles H.....	244, 292	Denton Brothers.....	236, 238
Davis, J. A.....	311	Denver Fire Clay Co.....	389
Davis, J. Z.....	364	Denver Marble and Onyx Co.....	364
Davis, Samuel P.....	256	Department of Agriculture, United States.....	326, 351
Davison, F. M.....	326	Bureau Animal of Industry.....	307, 350
Dawes, J. M.....	311	Dairy Division, Bureau of Ani- mal industry.....	305, 307, 322
Day, David T.....	364	Division of Agrostology.....	311
Day, E. D.....	311	Division of Chemistry.....	304, 352, 354
Day, Frank Miles, & Bro.....	261	Division of Entomology.....	332
Deaf and Blind, Institute, California	419	Division of Pomology.....	333, 335
Deaf and Dumb, Columbia Institute	419	Division of Soils.....	307, 404
Deaf and Dumb, Institute, New York City.....	419	Division of Statistics.....	326
Deaf, School for, Nebraska State..	419	Division of Vegetable Physi- ology and Pathology.....	311
Deaken, F.....	364	Maine.....	411
Deaken & Taylor.....	364	Michigan.....	411
Dean, Dr. Bashford.....	347	Museum Division.....	326
Dearth, Henry Golden.....	245	Office of Experiment Stations.....	307
De Castello, Rev. S. M.....	269	Weather Bureau.....	307
Decatur Cereal Mill Co.....	349	Department of Education, United States Commission to Paris.....	236, 238, 239, 241
Decorative Art Society.....	400	Department of Forestry, Commis- sion to Paris.....	341, 346, 347
De Corse, S.....	364	Department of Mines, Commission to Paris.....	389
Dedham Pottery.....	394	Department of Public Works, Bu- reau of Surveys.....	294
Deep Creek Mining Co.....	364	Department of Social Economy, United States Commission to Paris.....	407, 408, 411, 412, 413, 415, 417, 419
Deere & Co.....	304	Department of statistics, Indiana.....	412
Deering Harvester Co..	285, 292, 304, 399		
Deering Manufacturing Co.....	408		
De Goha, J. W.....	364		
Deidesheimer, P.....	364		
Deitrick, T. M.....	364		
De La Mar's Mercur Mines Co....	364, 389, 408		
Delano Publishing Co.....	269		
De Land, A. D.....	322		
De Land, C.....	311		
Delaware and Hudson Co.....	364		
Delaware and Lackawanna Rail- road Co.....	364		
De Lestry, Edmund Louis.....	269		

	Page.		Page
Department of the Interior, Census		Dewey, Gould & Co	326
Bureau	417	Dewey, H. T., & Sons.....	352
Department of Navy... 278, 421, 422, 423		Dewstoe, Martin R	326
Bureau of Construction and		Dexter Folder Co.....	269
Repair.....	422	Dexter, Miss M. C.....	394
Bureau Equipment, Compass		Dexter, Marie L.....	269
Office.....	277, 422	Dietetic and Hygienic Gazette....	417
Bureau of Equipment, Hydro-		Diamond State Steel Co.....	292, 298
graphic Office	422	Dibble, Mabel C.....	394
Bureau of Equipment, Naval		Dibrell Brothers	404
Observatory.....	423	Dick, A. B., Co	263
Bureau of Equipment.....	422, 423	Dickenson, Charles G. L. O	302
Bureau of Navigation, Nautical		Dickerson, J. H., & Son	311
Almanac Office.....	423	Dicke Tool Co.....	290
Bureau of Navigation, Naval		Dickey, W. S., Manufacturing	
Academy	422	Co	365
Bureau of Navigation, Office of		Dickie, James	335
Naval Intelligence.....	423	Dickinson, Albert, Co.....	311
Bureau of Ordnance.....	421, 422	Dickinson Fire and Pressed Brick	
Bureau of Steam Engineering.	422	Works.....	365, 389
Bureau of Supplies and Ac-		Dickson, M. E	245
counts	423	Diehl, E. F	311
Navy-yard	421	Dier, George	365
Department of public instruction:		Diers, E. G	394
Hawaii	236	Dill, Joseph T	326
New York State.....	241	Dilling & Co	351
Department of state, Massachu-		Dimler, William M.....	326
setts.....	417	Dingman, J. A	302
Department of Transportation,		Dintelman, L. F.....	335
United States Commission to		Direct Separator Co.....	281
Paris	294, 302	Director of the Mint.....	408
Department of War, Signal Corps.	421	Dixie Miller	269
De Puy, Clarence C.....	269	Dixie Mining and Smelting Co ...	365
Derby, C. C.....	364	Dixon, Joseph, Crucible Co....	281, 288
Derby, S. H.....	335	Doan, C. F.....	311
Dern, John	364	Doane, W. A.....	298
De Rycke, Joseph	281	Dock, Herman	285
Deseret Museum	364	Dockery & Donelson.....	326
Des Jardins, B. M.....	263, 278	Dockham, C. A., & Co.....	408
Des Jardins Type Justifier Co	263	Dodd, Mead & Co	269
Des Loges Lead Co	389	Dodge, Charles Richards.....	265, 326
Dessar, Louis Paul.....	245	Doe Run Mining Co	365
Detroit Copper Mining Co.....	364, 389	Doherty & Wadsworth.....	400
Detroit Lubricator Co.....	281	Dohn, C	311
Detroit Mining Co.....	364	Doig, William S	285
Detroit and Deadwood Co.....	364	Dominion Co.....	269
Devine, J. E	364	Donaldson, C. S	311
Devlin, Thomas, & Co	390	Donoho, Roger G.....	245
Devling, Charles	364	Dooley, W. P	365
Devore, P. L.....	335	Doolittle, J	365
Dewdrop Mining and Milling Co..	364	Doran, A. J.....	365
Dew Drop Mining Co	365	Doremus Canceling Machine Co ..	263
De Wentworth, Cecilia	245	Doremus, Caroline B	394

	Page.		Page.
Doremus	302	Earl & Wilson	409
Dorgan, L. C.	326	Easley, J. W.	326
Dorgan, L. C., & Co	326	Eastern Mennonite Conference....	269
Dorick Mining Co	365	Eastman Kodac Co	265, 413
Dorman, Walter	335	East Washington Improvement Co..	311
Dorset Mountain Marble Co.	365	Eaton, C. W.	245
Dorsey, W.	311	Ebeck, Joe	335
Doub, F.	311	Ebersoll, George.	335
Douglass, W.	365	Eck Dynamo and Motor Works ..	288
Dowst Brothers Co	269	Edgar, C. S.	365
Doxsee, J. H., & Sons	350	Edge Brothers	311
Drake Company	365	Edison Manufacturing Co	288, 289
Drake, Will H.	245	Edison Ore Concentrating Co.	389
Drake & Co	392, 393	Edison, Thomas A., jr.	289
Draper, Andrew Sloan	236	Edison, Thomas A.	278
Draper Co	412	Edson Manufacturing Co.	292
Draughn, Alonzo B.	326	Educational Publishing Co.	269
Drein, Thomas, & Co	302	Educational Review	236, 238, 239
Dresser, S. R., Co	283, 365	Educational Specialty Co.	269
Drevet Manufacturing Co	402	Edwards, A. W.	365
Drew, C.	311	Edwards, L. B.	269
Du Bois, W. E. B.	415	Edwards, M. A.	365
Dubreuil, Marie V. T.	302	Eggart, W.	311
Ducktown Mining Co	365	Eggers & Co	365
Duell, I. S.	311	Eggers & Hunter	365
Duff, J. H. C.	311	Eggleson, Thomas	391
Dula, J. A.	335	Eichelburger, R. H.	245
Dun, James	294	Eicher, J. C.	365
Duncan, J. S.	263	Eigenman, C. H.	347
Duncan, John P.	302	Eisen, Vineyard	352
Duncan, Mrs. M.	335, 350	Ekman, A.	365
Dungan, Hood & Co.	403, 409	Ekman & Stow	311
Dunlap, Henry M.	335	Eldridge Electrical Manufacturing Co	291
Dunlap, John R.	269	Electric Motor and Equipment Co..	289
Dunlap Mining Co	365	Electric Vehicle Co.	296
Dunn, L. F.	365	Electrical Review Publishing Co..	269
Du Pre, A. H., & Son.	326	Electrical World and Engineer...	269
Durant, Walter N.	263, 283	Eleventh Hour Mining Co	365
Durkee, J. H., Coal Co	365	Elgin Manufacturing Co	305
Dustin, William S	269	Eliason, Alice	335
Dutton, A. H.	335	Elkton Mining Co	365
Dutton, A. J.	365	Elliot & Burge	311
Duval, A.	352	Elliot, D. G.	346
Dwight Mining Co	365	Elliott, Jesse P.	335
Dwight, W. B.	365	Elliott, William R.	302
Eads, Mixter & Heald Zinc Co.	365	Ellis, Harvey	245
Eagle Lock Co	391	Ellis, W. H.	302
Eagle Mining Co	365	Ellison, M. E.	326
Eagle Mining Co., Salem, Ky.	365	Ellwanger & Barry	335
Eagle Oil and Supply Co.	281	Elsinore Coal and Clay Co	365
Eagleson, A. S.	326	Elzner & Anderson	280
Eakins, Thomas	245	Emanuel, J. M.	311
Eames, G. T., Co	285		

	Page.		Page.
Emerson, Harriet O	400	Ertels, George M., Co.....	305
Emerson, S. F.....	312	Esperanza Mining Co.....	366
Emmet, Lydia F.....	245	Estes, Dana & Co.....	269
Empire Iron and Steel Co.....	365	Etta Mining Co.....	366
Empire Mill	349	Etta Mining Co., Keystone, S. Dak.	365
Empire Mining Co.....	365	Eubank, A. L.....	326
Empire Mining Co., Nevada Coun- ty, Cal.....	365	Eureka Consolidated Mining Co..	366
Empire Silk Works.....	400	Eureka Hill Mining Co.....	366
Empire State Mining and Milling Co	365	Eureka Mining Co.....	366
Empire State Wine Co.....	352	Eureka Slate Co.....	366
Enestvedt, O. O.....	312	Eureka Tempered Copper Works.	288
Engels, H. A.....	365	Evans, John W.....	256
Engels & Krudwig Wine Co.....	353	Evans, L.....	366
Engineering Magazine	269	Evans Marble Co.....	366
Engineering Mechanics Publishing Co	269	Evans, W. D.....	326
Engineering News Publishing Co.	269, 294, 409	Everitt, J. A.....	312
Engineering Record	298	Evermann, B. W.....	347
Engineering Society	298	Ewing, R. T.....	326
Engineering Society, Michigan...	298	Ewing, Thomas	366
Engineering societies	298	Excelsior Brownstone Co.....	366
Engineering, Western Society of..	298	Excelsior Fire Brick Co.....	366
Engineers and Surveyors, Illinois Society	298	Excelsior Slate Co.....	366
Engineers, Civil, American Society	298	Experiment Station:	
Engineers' Club of Cincinnati...	298	North Carolina.....	326
Engineers' Club of Philadelphia..	298	North Dakota	312
Engineers' Club of St. Louis.....	298	Oregon	312
Engineers, Montana Society.....	298	Exploration Syndicate.....	366
Engineers' Society of Western Pennsylvania	298	Express Gazette.....	270, 409
Englehard, G. P.....	269	Eyre, Wilson, Jr.....	261
English, B. G.....	312	Ezekeil, Herbert T.....	270
English, R. W., Lumber Co.....	366	Fabiola Hospital.....	421
Enneking, J. J.....	245	Facer, William D.....	334
Ennis, Robert T.....	335	Factory News	409
Enoge, H.....	312	Fain, W. N.....	312
Ensign, O. A.....	312, 366	Fair Haven Marble and Marbleized Slate Co	366
Enterprise Manufacturing Co... 348,	391	Fairbanks, Ella A.....	394
Enterprise Mining Co.....	366	Fairbanks, Morse & Co.....	298
Epitomist Publishing Co.....	269	Fairfield Dairy Co.....	305, 323
Equalization, Wyoming State Board	298	Fairhurst, G. W.....	366
Equitable Life Assurance Society, United States.....	413	Fairmont Coal and Iron Co.....	366
Erie Publishing Co.....	269	Fairmount Consolidated Mining Co	366
Erie, Harrisburg, and Wilkesbarre pupils	236	Falconer, W. T., Manufacturing Co	332
Erie Preserving Co.....	350	Falkner, N. K.....	335
Erie Railroad Co	366	Fall Brook Coal Co.....	366
		Fallin, W. H.....	326
		Falling Rock Cannel Coal Co....	366
		Farm Implement News	270, 409
		Farm Machinery	409
		Farm and Ranch Publishing Co..	270
		Farmers' Produce Association of Delaware	335
		Farmers' Voice.....	270

	Page.		Page.
Farnsworth, W. W	335	Fitch, C. L	305
Farr & Bailey Manufacturing Co..	393	Fitzgibbon-Clark, Mrs	270
Farrell, T. W	326	Flack, William M	336
Farrill, P. W	326	Flagg, Ernest	261, 422
Farr Telephone and Construction Supply Co	290	Flagg Manufacturing Co	280, 398
Fassett, C. W	270	Flanagan, John	259
Fassett, Herbert S	270	Flather Planer Co	285
Faught, A. E	312	Flather & Co	285
Faunce & Spinney	401	Fleetwood, C. E	415
Faure, M	354	Flemington Coal and Coke Co....	366
Faxon, John T	366	Flickinger, J. H., Co	351, 409
Fay Factory American Bicycle Co..	296	Flint, Charles R	302
Fay, J. A., & Egan Co	285	Flint, Daniel	326
Featherstone Factory American Bi- cycle Co	296	Florida Brandy Distilling Co ...	353, 354
Fechheimer, Rose	394	Florentine Marble Co	366
Feeble-minded, school for:		Florida Havana Co	404
Minnesota	419	Flory, S., Manufacturing Co	292
Wisconsin	419	Flournouy, W. T	336
Feigenspan, Christian, & Co	354	Flowers, J. L	312
Fellows Gear Shaper Co	285	Fluor Spar Co	366
Felton, Edith R	394	Flynt, W. N., Granite Co	366
Fenwick, A. D., Machine Co	398	Foederer, Robert H	402, 403
Ferguson, J. G	326	Foley, James	366
Ferguson Mining Co	366	Folts, A. J	326
Ferguson, W	312	Foot, Pierson & Co	290
Fern Bulletin Co	270	Foote Mineral Co	238, 239, 366
Ferracute Machine Co	278, 285	Forbes, J. Malcolm	302
Ferrell, B. C	326	Forbes, W. D., Co	281
Ferris Brothers Co	413	Ford, Charles P., Co	401
Ferriss, Ida	394	Ford, J. S., Johnson & Co	393
Ferry & Class	261	Ford, Thomas P	281, 283
Field Columbian Museum	366	Foreman, J. B	312
Field, Charlotte E	394	Foreman, N	312
Field, J. C	312	Forest and Stream Publishing Co.	270,
Field & Strickland	326		341, 346, 347
Figard, J. W	312	Foresters of America	409
Finkel, B. F	270	Forestry exhibit (collective) ...	341-346
Finke's, A., widow	353	Forms of Massachusetts bank co- operative Associations	411
Finks, J. B	326	Forney Mining Co	366
First National Kansas Mining Co..	366	Forrest, James M	326
Fish, A	366	Forsythe, William	350
Fisher Governor Co	283	Fort Madison and Appanoose Stone Co	366
Fisheries, game, and forest com- mission of New York	341	Fort Wayne Safety Valve Co	281
Fisher, Mark	245	Fosdick-Halloway Machine Co ...	285
Fishing Gazette	270	Foss, Harriet C	245
Fisk Mining and Milling Co	366	Fissich, F. L., Co	366
Fiske Brothers Refining Co	281, 402	Fosselmann, C. S	336
Fiske, Louis S., & Co	326	Foster, A. W., Mrs	400
Fitch, A. B	366	Foster, Ben	245
Fitch, C. E	312	Foster Bros	336
		Foster Engineering Co	281

	Page.		Page.
Foster, W. E	366	Fugua, M. J	327
Foster, Walter H	285	Fuller, E. Chubb	270
Foster & Glassell	327	Fuller, Henry E	336
Fostoria Glass Co	409	Fuller, L. H	367
Fox, T	312	Fuller, Lucia Fairchild	245-246
Frackleton, S. S., Mrs	394	Fultonham Brick Co	367
Fraine, Thomas W	347	Funk & Wagnalls Co	270
Francis, C. H	336	Furgerson, Alan R	302
Francis Mining Co	366	Furniture Commercial Red Book ..	409
Franco-American Food Co	350	Furniture Worker	409
Frank, J. W	366	Gage, John P	327
Frank Leslie Publishing House ..	263, 270	Gale Shoe Manufacturing Co	401
Frank, M. M	270	Galena Oil Co	298
Frankhouser, D. C	312	Galena Queen Mining Co	367
Frankinbush, J. M	327	Gallagher, Sears	246
Franklin, H. H., Manufacturing Co	389, 391	Gallegar, James	336
Franklin, Nelson	367	Gallison, Henry H	246
Franklin Typewriter Co	263	Gallop, J. O	327
Franzen, August	245	Galloway, T. C	336
Frazee, A. A., Mrs	394	Gallup, H. H	367
Frazier, R. A	312	Gambetta Mining Co	367
Freck, The William, Co	402	Gambetter Mining Co	367
Free Coinage Mining Co	367	Gambill, T. H	312
Freedley, J. K., & Sons	367	Gamill, L. C	312
Freeland Mining Co	367	Gano, W. G	336
Freeman, W	312	Ganse, Fred	336
Freeport Factory, American Bicy- cle Co	296	Garber, William	336
Freeport Granite Quarries	367	Gardner	367
Fremont Marble Co	367	Gardner & Cox	302
French, Daniel C	259	Gardner, W. A	336
French, Frank	256	Garland, B. W	327
French, J. W	367	Garmain, Edw	353
French Lick Springs	417	Garmania Wine Cellars Co	353
French, T. J	367	Garnsey, E. E	246, 392
Fresno Chamber of Commerce ..	350	Garretson, J. V	336
Fresno Enterprise Co	367	Garrett & Co	353
Fretwell, C. W	312	Garrison, J. F	367
Frick, H. C., Coke Co	367	Garton-Daniels Co	288
Fricke, John H	367	Gauley Mountain Coal Co	367
Friedigh, J. H	367	Gauley, Robert David	246
Frink, I. P	289	Gay, Walter	246
Fripp, William P	327	Gay & Ward	285
Frolich, F. H	406	Gazette Publishing Co	270
Fromuth, Charles H	245	Geddes & Seerie Stone Co	367
Frost, A. B	245	Gee Whillekins Mining Co	367
Frost, George	336	Gehrmann, Charles	367
Frost, J. S	367	Gelert, Johannes Sophus	259
Fry, Mason	336	Gem Cutlery Co	405
Fry, Marshall, Mrs	395	Gemmell, R. C	294
Fry, Marshall T., jr	395	General Electric Co	289, 413, 422
Fry, William H	280	General Equipment Co	288
		Genesee, D	402
		Genesee Salt Co	367

	Page.		Page.
Genesee Valley Mining Co	367	Glackens, William	246
Genesee-Vanderbilt Mining Co ...	367	Gladding, McBean & Co	368
Geneva Factory, American Bicycle Co	296	Glasgow Western Exploitation Co.	368
Geneva Preserving Co	350	Glass, A	312
Geological Publishing Co	270	Glass and Pottery World Co.	409
Geological Survey:		Gleason, P	336
Illinois	367	Gleason Tool Co.	285
Indiana	367	Globe Buffer Co	398
Iowa	367	Globe-Wernicke Co.	393
Kansas	367	Glucose Sugar Refining Co	312
Kentucky	367	Gluyas, W. R	312
Maryland	367	Goebel Brewing Co	354
Michigan	367	Goehst, Henry	289
New Jersey	367	Goetjean, N	350
New York	367	Goetzman, Albert	336
North Carolina	367	Gold Car Heating Co.	291
United States of America	367	Gold Coin Co., Colorado	368
West Virginia	368	Gold Coin Co., Indiana	368
Geometric Drill Co	285	Gold King Mining Co	368
George, D. S. G	368	Gold King Mining and Milling Co.	368
Georgia Marble Co	368	Goldberg, B. W	302
German-American Provision Co ..	350	Golden Gate Mining Co.	368
German, Soloman	302	Golden Mines Co	368
Gerrish, F. L	312	Golden Rule Co	270
Gerry & Murray	263	Goldon Wedge Mine	368
Get There Mining Co	368	Gondy, Arthur L	302
Gettys, L. A	368	Good Roads Machinery Co.	293
Gibson, A. C	285	Good Roads Office	415
Gibson, Charles Dana	246	Goodall, O. P	312
Gibson, Joseph W	270	Goodall-Pratt Co	285
Giddings, F	312	Goodell, C. J	312
Gidley, J	312	Goodenough Mining Co.	368
Gier, Theodore, Co	353	Goodlett, James P	327
Gifford, R. Swain	246	Goodman, L. A	336
Gihon, Albert Dakin	246	Goodman & Dickerson Co.	270
Gilbert, Charles	368	Goodman, Mrs. J. K	336
Gilbert, J. E., & Co	327	Goodridge, Judson A., Co	397
Gilberts, A. J	368	Goodsell Packing Co	281
Gilbreth Seam Face Granite Co ...	368	Goodwin Car Co	298, 302
Gilchrist, Miss	400	Gopher Gold Mining Co	368
Gilfillan Flagstone Co	368	Gordon Battery Co	289, 291
Gilkey, W. T	312	Gordon, Joseph H., Mrs	395
Gillen Stone Co	368	Gordon, W. W., & Co	327
Gillette-Herzog Manufacturing Co ..	292	Gorham Manufacturing Co	413
Gillingham, G. L	312	Gorham Manufacturing Co	405, 406
Gillis, Jim	368	Gorman Mining Co	368
Gilman, N. B	407	Gorton, G., Machine Co	285
Gilmore, J. T	368	Goss, John L	368
Gilmore, W. H	312	Goss Printing Press Co	263
Girard, G. C., & Cutler, M	393, 395	Gotshaw, Mrs. A. R	400
Girard, L. N	368	Gould Coupler Co	298
Gisholt Machine Co	285	Gould & Eberhart	285
		Gould Storage Battery Co	289

	Page.		Page.
Gouverneur Marble Co.....	368	Grim, J. J.....	312
Graber, H. S.....	283	Griswold, Kate S.....	270
Gracie, John M.....	327	Griswold, M.....	369
Grafly, Charles.....	259	Griswold Manufacturing Co.....	397
Grafton Quarry Co.....	368	Grizzly Bear Mining Co.....	369
Graham, A. T.....	327	Groezinger, W.....	369
Graham, E. M.....	327	Grotelmoeke, H.....	312
Graham, W. A.....	327	Grothjean, Fanny.....	246
Grain Dealers' Journal.....	411	Grueby Faience Co.....	395
Granby Mining and Smelting Co..	368	Grueby, H.....	395
Grand Central Mining Co.....	368	Guasti-Secondo.....	353
Grandelmeyer, J.....	368	Guerin, Jules.....	246
Grandin, J. L. & E. B.....	312	Guerin, P. E.....	280
Grand Prize Mining Co.....	368	Guesnard, August.....	327
Grand Rapids Cycle Co.....	296	Guild, St. Johns.....	419
Granite.....	409	Guild & Lord.....	270
Grant Machine Tool Works.....	285	Guilfoyle, P.....	369
Graphic Mines and Smelting Works.....	368, 389	Gulden, Charles.....	350
Grasman & Gerlach.....	406	Gumbell, E., & Co.....	327
Graves, Edwin D.....	293	Gund, John, Brewing Co.....	354
Gray, George D.....	368	Gundlach-Bundschu Wine Co....	353
Gray, Samuel M.....	294	Gunn, James O. B.....	353
Great Eastern Quicksilver Mining Co.....	368	Gunnell Mining Co.....	369
Great Falls Fire Brick Co.....	368, 389	Gunning, L. D.....	336
Great Western Quicksilver Mining Co.....	368	Gunther, J.....	346
Green, B. A.....	327	Gurler, H. B.....	305
Green, Bernard R.....	294	Gurley Investment Co.....	369
Green, Calvin, & Son.....	403	Guy, John N.....	327
Green, G.....	368	Guy, J. Seymour.....	246
Green, I. W.....	312	Guydel, H. W.....	312
Green, Mc.....	327	Gwin, Davis & Gwin.....	327
Green, Monroe A.....	347	Gwin Development Co.....	369
Green, Monte L.....	270	Hadaway Electric Heating and Engineering Co.....	291
Green Mountain Mining Co.....	368	Hade, J. P.....	312
Green, Wesley.....	327	Haden Brothers.....	336
Greenbrier White Sulphur Springs	417	Hagan-Dart Tobacco Co.....	404
Greene, H. H.....	327	Hagar, G.....	313
Greene, R.....	312	Haight, R. J.....	270
Greenwood, Oliver K.....	283	Haile Mining Co.....	369
Gregg, S. G.....	368	Haile & Waltz.....	327
Gregory, W. B.....	327	Hailmann, William N.....	241
Gregory & Co.....	368	Haines Industrial Institute.....	241
Greiner, Emil.....	305	Haines, J. J.....	313
Grier, T. J.....	369	Haines, J. M.....	369
Grierson, Oldham & Co.....	353	Hale, Barry.....	327
Griest, Amos W.....	336	Hall, E. L.....	298
Griffin, G. M.....	312	Hall, F. S.....	369
Griffin, John.....	327	Hall, J. C.....	327
Griffith, D.....	369	Hall, J. R.....	359
Grim, D. A.....	312	Hall, Thomas J.....	280
		Hall, William A.....	305, 323
		Halladay, C. L.....	327

	Page.		Page.
Hallanan, M.....	297	Harris, W. T.....	236
Hallett, H. C.....	327	Harrison, Alexander.....	246
Halliday, W. P.....	327	Harrison, Birge.....	247
Halloran, J. E.....	270	Harrison, John.....	327
Hallowell, Donald & Co.....	327	Harrison, L. T., Mrs.....	395
Halsted Brothers.....	369	Hart, J. S.....	327
Hambidge, Jay.....	246	Hart, J. W.....	369
Hamilton Manufacturing Co.....	264	Hart, R. G.....	369
Hamilton Organ Co.....	280	Hart & Crouse Co.....	397
Hammond, C. M.....	353	Hart & Hageman Manufacturing Co.....	289
Hammond, E. E.....	313	Hartke, John J.....	369
Hammond, Ida Story.....	395	Hartley, C. P.....	336
Hammond Typewriter Co.....	264	Hartley, H. H.....	369
Hammondsport Wine Co.....	411	Hartley House.....	420
Hampton Normal and Agricul- tural Institute.....	241, 415	Hartley, L. M.....	327
Hanan & Son.....	401	Hartnan, C. T.....	369
Hanchet, L.....	369	Hartwell, B. W.....	336
Hancock, George A.....	327	Hartwig & Miller.....	288, 289
Hancock Mining Co.....	369	Harvard Co.....	279
Hancock, W. H.....	313	Harvard Cooperative Society.....	412
Hanks, Mrs. W.....	369	Harvard Crimson.....	239
Hanlon, J.....	336	Harvard University.....	239
Hanna, J. M.....	336	Harvard University Astronomical Observatory.....	239
Hanson, Jennie E.....	295	Harvey, Eli.....	259
Hara, G. R.....	302	Harvey, Fred.....	323
Haraszthy, Arpad.....	353	Harvey, Thomas F.....	270
Harbison, Joseph L.....	270	Hassam, Childe.....	247
Hardeman, T.....	313	Hastings Estate.....	353
Harden, W. A.....	327	Hastings, Charles S.....	278
Hardenberg, H. J.....	261	Hatch Hill Bed Slate Works.....	369
Hardie, W. T. & Co.....	327	Hatch, R. S.....	369
Hardwicke, James K.....	369	Hatcher, M. L.....	336
Hardy Lamp Co.....	289	Hathenbruck, F. W. C.....	369
Hargett, S.....	313	Hatley, J. S.....	336
Hargrave, Joseph.....	327	Hatton, J. H.....	302
Harmon, E. R.....	313	Haupt, Lewis M.....	294
Harmon, F. J.....	327	Havana Commercial Co.....	404
Harmon & McIlroy.....	369	Havens, H. B., Co.....	369
Harper, Robert H.....	415	Havens, J. H., Mrs.....	400
Harper, William G.....	327	Hawkins, B. C.....	313
Harpster, Henry.....	336	Hawkins, B. W.....	327
Harrell, George R.....	327	Hawkins, E. M.....	369
Harrington, Frank O.....	336	Hawkins, Henry.....	327
Harris Automatic Press Co.....	264	Hawkey & Moody.....	313
Harris, C. G.....	313	Hayden Company.....	393
Harris Clay Co.....	369	Hayden & Derby Manufacturing Co.....	281
Harris, George C.....	327	Haydon, Charles H.....	247
Harris, Henry W.....	302	Hayes, H. M.....	327
Harris, John S.....	327	Hayne & Whitaker.....	351
Harris, Thomas.....	327	Haynes Brothers.....	313, 369
Harris, W. P.....	327		
Harris, W. R.....	336		

	Page.		Page.
Haynes, D. O., & Co.....	270	Herzog Teleseme Co.....	290, 291
Hays, J. B.....	313	Hesla, E. S.....	313
Hays, J. C.....	313	Hess, Frederick.....	353
Hays, X. D.....	327	Hessleton, B. C.....	369
Hazard, R. T., & Co.....	393	Hetzel, David B.....	369
Hazlewood, J. D.....	327	Heublein, G. T., & Bros.....	354
Heald, C. H.....	328	Heurich, C., Brewing Co.....	354
Heald, E. P.....	369	Hewitt, E. W.....	336
Heald's Business College.....	241	Hewlet.....	261
Healey, M. & E.....	395	Heyden & Shepard.....	261
Health Food Co.....	349	Heydenfeldt, S.....	369
Healy, W. P.....	285	Hibbard, Rodman, Ely Safe Co.....	391
Healy & Millet.....	392	Hibbard, Spencer, Bartlett & Co..	391
Heater, C. W.....	313	Hichborn, Philip.....	302, 422
Hecht, Liebmann & Co.....	328	Hickey, D.....	369
Hecla Iron Works.....	290	Hickly, H. V.....	294
Hedberg, A. S.....	302	Hickman, J.....	313
Heideman, W. H.....	313	Hickman, J. F.....	313
Heikes, Victor C.....	369	Hickmott Canning Co.....	350
Heim, Fred.....	369	Hidden Treasure Mining Co.....	369
Heimath, Isabella.....	419	Hiebendahl, Miss E.....	398
Heims, Thomas C., & Co.....	369	Hiester, Gabriel.....	336
Heimstreet, E. B.....	270	Hielt, W. S.....	336
Heinemann, E.....	256	Higbee Joint Co.....	281
Heinicke-Fiegel Lithograph Co...	264	Higginbotham-Davis Journal and Alarm System.....	302
Heinz, H. J., Co.....	352, 413	Higginson, H. C.....	302
Heissler & Junge Co.....	354	Hill, Charles L.....	313
Helios-Upton Co.....	290	Hill, E. C.....	313
Hellbaum, F.....	313	Hill, George.....	293
Helmick, H.....	246	Hill, H. P.....	313
Helvetia Milk Condensing Co.....	323	Hill, Hugh, Tool Co.....	285
Helzinger, G.....	313	Hill, J. T.....	369
Hemment, J. C.....	239	Hill, John.....	313
Hempel & Dingsen.....	264	Hilles & Jones Co.....	285
Henderers', A. L., Sons.....	283	Hillhouse, George S.....	336
Hendey Machine Co.....	285	Hills, Laura C.....	247
Hendricks' Architectural Direc- tory.....	409	Hinde & Dauch.....	404
Hendricks Brothers.....	298	Hinsdale, B. A.....	236, 238
Heney, Richard, jr.....	353	Hinson, W. G.....	328
Henly, George.....	369	Hipwood-Barrett Car and Fender Co.....	298
Henny, D. C.....	293	Hires-Turner Glass Co.....	409
Henrich, Carl.....	369	Hirsch, Baron de.....	240, 332, 420
Henry, C., Mining Co.....	369	Hirsch, Joseph, & Sons.....	399
Henshaw, J. A.....	347	Hislop, T. George.....	369
Hensley, Wilson.....	336	Hitchcock, George.....	247
Herald Publishing Co.....	409	Hitchcock, Lucius W.....	247
Herbert, Frederick D.....	302	Hoag, Jay.....	313
Herendeen Manufacturing Co.....	397	Hoard's Dairyman.....	411
Hermany, Charles.....	294	Hobbs, A. L.....	350
Herrick, G. W., & Co.....	401	Hockanum Co.....	399
Herring, Mabel C.....	259		
Herter, Albert.....	247, 392		

	Page.		Page.
Hocking Valley R. R	409	Horton, E., & Son Co	285
Hodgin, E. N	313	Hospital Association, New York	
Hoelscher, W., & Co	353	City	420
Hoff, G. M	313	Hospital boards	420
Hoff, Olaf	294	Hospital for Children	420
Hoffman, C. J	414	Hospitals:	
Hoffman, Daniel	336	Boston City	419
Hogan, J	369	Cambridge	420
Hoge, Irwin & Co	404	Massachusetts General	420
Hoggson & Pettis Manufacturing		Morton	420
Co	285	Johns Hopkins	420
Holland's Manufacturing Co	283	Pennsylvania	420
Holland Torpedo Boat Co	422	Presbyterian	420
Holler, John	270	Hospitals for Insane, New Jersey ..	420
Hollinger, Amos	403	Indiana	420
Holman, Frank	247	Hotchkiss, C. M	336
Holmes Fibre Graphite Manufac-		Hotchkiss, C. W	298
turing Co	288	Hotchkiss, H. & G., Oil Co	403
Holmes Mining Co	370	Hotel Monthly	409
Holmes, William S	313	Hotel Red Book and Directory	
Holophane Glass Co	290, 397, 398	Co	270, 409
Holsinger, Frank	336	Hough, F. B	341
Holtz, Scott	328	Hough, Romeyn B	341
Holy Terror Mining Co	370	Houghton, S. C	370
Holzapfel, G	270	Houk, F. M	336
Holzer, Phillip, Mrs	395	Housekeeper Corporation	270
Home for Aged Couples	419	House of Refuge	420
Home for Aged Men	419	Houston, Caroline A	247
Home for Aged Women	419	Houston, Frances C	247
Home Circle Proceedings	414	Houx, Mrs. E. M	313
Home, Illinois Soldiers'	419	Hovey, William	370
Home, Massachusetts Soldiers' ..	419	Howard, Hiram	313
Home Mining Co	370	Howard's, S. E., Sons' Co	406
Home-Riverside Coal Co	370	Howard University	241, 415
Home Science Publishing Co	270, 417	Howarth, S	347
Homer, Winslow	247	Howe Addressing Co	271, 409
Homestake Mining Co	370	Howe, H. M	389
Homestead Valve Manufacturing		Howell, B. F	350
Co	281	Howell, Edwin E	236
Hommel, M.	353	Hoy, M. P	302
Hondon, Jean Antoine	406	Hoyt, Howard	370
Hood, W. M	313	Hoyt, J. K	313
Hooker, G	328	Hoyt Metal Co	281, 283
Hooper, W. J., Manufacturing Co ..	347	Hoyt, G. W	313
Hoover, C. H	313	Hubbard & Co	281
Hopkins, J. T	313	Hubbard, H. P	271
Hopkins, A. D	313	Huckins, J. H. W., & Co	350
Hopson, William F	256	Hudson and Chester Granite Co ..	370
Horlocher, Leta	395	Hudson, Charles B	346
Horsburgh & Scott	283	Hudson, Daniel E	271
Horsfal Mining and Milling Co ..	370	Huebel and Manger Manufacturing	
Horsley, W. B	313	Co	290
Horst Brothers	328	Huebsch, D. A. & Co	271

	Page.		Page.
Huett, Lee.....	328	Indiana Coal Co.....	370
Huff, B. F.....	313	Indiana Horticultural Society.....	336
Huff, Perry.....	336	Indiana Paving Brick Co.....	370
Hug, H.....	313	Indianapolis Brewing Co.....	354
Huggins, J. H.....	313	Indianapolis Hominy Mills.....	349
Huggins, W. A.....	313	Indo-Egyptian Compress Co.....	304, 328
Hughes, M. O.....	313	Ingalls Zinc Co.....	370
Hughes, John P.....	302	Ingersoll Milling Machine Co.....	285
Hughes, W. G.....	328	Ingersoll, Robert H., & Bro.....	405
Hughes, William.....	271	Ingersoll-Sergeant Drill Co.....	281,
Hull.....	261	282, 283, 293, 370, 391, 409	
Humphrey, Mrs. Edward L.....	395	Ingle & Almìrall.....	261
Hunt, R. M.....	261	Inglis, W., Wire and Iron Works.....	290
Hunt & Alexander.....	370	Inland Printer Co.....	264, 271, 409
Hunter Publishing Co.....	271	Inland Publishing Co.....	236, 271
Huntington, W. W.....	370	Inman American Box Machine Co.....	404
Hurd, Harriet B.....	395	Inness, George.....	247
Hurley, E. T.....	395	Insane and Feeble Minded.....	421
Hurt, J. H.....	313	Insanity, Massachusetts board of.....	420
Husband, Joseph.....	336	Inspection of Factories, Bureau	
Husband, W.....	370	of—	
Huston, H. F.....	336	Connecticut.....	411
Hutton, W. H.....	313	Illinois.....	411
Hutton, William R.....	293	Indiana.....	411
Hyde, Henry C.....	370	Massachusetts.....	411
Hyde, W. H.....	247	Michigan.....	411
Hydraulic Press Brick Co.....	370	Missouri.....	411
Hygienic Optical Co.....	278, 397	New Jersey.....	411
Hymer, J. P.....	370	New York.....	411
Ibex Mining Co.....	370	Ohio.....	411
Ice and Cold Storage Co.....	354	Pennsylvania.....	411
Idaho Mining Co.....	370	Rhode Island.....	411
Idaho State Horticultural Society.....	336	Inspection of Mines, Bureau of—	
I. D. Company.....	370	Alabama.....	411
Idea Publishing Co.....	271	Indiana.....	411
Illini, The.....	239	Iowa.....	411
Illinois Central R. R. Co.....	294, 413	Kansas.....	411
Illinois Grain Inspection.....	313	Kentucky.....	411
Illinois Horticultural Society.....	336	Maryland.....	412
Illinois Steel Co.....	370, 390, 391, 409	Montana.....	412
Imboden, H.....	313	Ohio.....	412
Imkee, H. W.....	336	Pennsylvania.....	412
Imperial Factory American Bicycle Co.....	296	South Dakota.....	412
Imperial Manufacturing Co.....	264	West Virginia.....	412
Imperial Mill.....	349	Institute of Technology, Coopera-	
Imperial Packing Co.....	350	tive Association.....	412
Incandescent Electric Light Manip-		Insulating Staple Saddle Co.....	288, 290
ulator Co.....	290	Integral Mining Co.....	370
Independence Mining Co.....	370	International Arithmachine Co....	278
Independent Order of Foresters.....	413	International Association for Test-	
Independent Order of Rechabites.....	413	ing Materials.....	293
Inderriaden, J. B.....	350	International Board of Women's	
		Christian Association.....	271

	Page.		Page.
International Brake Shoe Co.....	298	James, G. G.....	337
International Button Hole Sewing Machine Co.....	398	Jamison, John B.....	328
International Cable Directory Co.....	290	Jandus, William.....	402
International Computing Machine Co.....	405	Jaques.....	261
International Food Co.....	314	Jaques, W. H.....	302
International Heater Co.....	397	Jaros, Mrs. J. N.....	400
International Monthly.....	271	Jefferson Medical College.....	421
International Navigation Co.....	302	Jeffrey Manufacturing Co.....	283, 288, 293, 371
International Pneumatic Railway Signal Co.....	298	Jeffs, L. A.....	371
International Typographical Union.....	414	Jelinck, Frank.....	337
Interstate Coal and Coke Co.....	370	Jenkins, William R.....	271
Invalid Chair Co.....	279	Jenkins, W. W.....	371
Inyo Development Co.....	370	Jenney Electric Manufacturing Co.....	288
Iowa Brick Co.....	370	Jennings, Mrs. S.....	314
Iowa Consolidated Mining Co.....	370	Jensen, N. P.....	350
Iowa Gold Mining and Milling Co.....	370	Jeter, L. B.....	328
Iowa Horticulture Society.....	336	Jeter, W. W.....	328
Iowa Iron Works.....	302	Jewell Nursery Co.....	314
Ireland, Mrs. William, jr.....	395	Jewett Typewriter Co.....	264
Iron Age Publishing Co.....	370	Jewish Orphans Home.....	420
Ironclad Resistance Co.....	288, 291	Jocinte Mining Co.....	371
Iron Hill Mining Co.....	370	John, H. W., Manufacturing Co.....	281, 288, 291
Iron Molders' Journal.....	409	Johns Hopkins Press.....	271
Iron Silver Mining Co.....	370	Johns Hopkins University.....	239
Iron Trade Review.....	409	Johns, W.....	314
Iron and Steel Association.....	409	Johnson, Cowdin & Co.....	400
Iron and Steel Publishing Co.....	271	Johnson, D. B.....	314
Iroquois Iron Works.....	293	Johnson, D. F.....	314
Irvine, J.....	370	Johnson, Eastman.....	247
Irving & Casson.....	393	Johnson, I. S., & Co.....	271
Irving Auger Bit Co.....	391	Johnson, Ida A.....	395
Irwin, Charles P.....	302	Johnson, J.....	302
Isabella Mining Co.....	370	Johnson, J. B.....	337
Italian-Swiss Agricultural Colony.....	353	Johnson, J. B., & Son.....	328
Ivanhoe Mining Co.....	370	Johnson, J. F., & Co.....	305
Ivers, John J.....	302	Johnson, J. M.....	328
Ivins, Dietz, Metzger & Co.....	393	Johnson, N.....	371
Jackson, E. B.....	328	Johnson, Thomas.....	256
Jackson, G. A.....	370	Johnson, Thos. H.....	298
Jackson, G. H. T.....	354	Johnson, Wallace C.....	294
Jackson, T. W.....	314	Johnson & Field Manufacturing Co.....	304
Jackson, Victor H.....	279	Johnston, C. W.....	328
Jackson's New Jersey Brownstone Quarry.....	370	Johnston, Fannie B.....	265
Jacob, A. R.....	328	Johnston Harvester Co.....	304
Jacobson, L. A.....	314	Johnston, J. A.....	371
Jacobus, Philo.....	336	Johnston, J. B.....	337
Jacoby, Peter.....	314	Johnston, J. Humphreys.....	247
Jagode, Phillip & Co.....	328	Jolly, William.....	314
James, Edmund J.....	241	Jones, Alfred.....	256
		Jones, A. N.....	314

	Page.		Page.
Jones, Ed.....	371	Keith, Wm. P.....	337
Jones, Edward D.....	409, 411, 415	Keller, Arthur I.....	248
Jones, H. Bolton.....	248	Keller, C.....	337
Jones, Hercules.....	328	Kelley, W.....	371
Jones, Horace R.....	328	Kellogg, Warren P.....	371
Jones, J. F.....	371	Kelly, O. S., Co.....	280
Jones, J. J.....	314	Kelly, F. D.....	279
Jones, J. M.....	328	Kelly, Howard A.....	279
Jones, J. W.....	328	Kelly, Thomas B.....	328
Jones & Lamson Machine Co.....	285	Kemmerer Coal Co.....	371
Jones & Primel.....	337	Kemp, Day & Co.....	350
Jordan, A. J.....	405, 406	Kempton, Joseph.....	337
Jordan, D. S.....	346, 347	Kendall, Chas. B.....	280
Jordan, J. F.....	404	Kendall, Margaret.....	248
Jorgensen, E. C. F.....	294	Kendall Mount Gold and Silver Mining Co.....	371
Jorss, A. F.....	391	Kendall, Sergeant.....	248
Josephi, Isaac A.....	248	Kendall, W. C.....	347
Joslin, C. T., Co.....	352	Kendrick, George P.....	395
Journal of Commerce Co.....	271	Kenly, William L.....	295
Journal of Education.....	236, 238	Kennedy, David.....	371
Joyner, N. C.....	328	Kennedy Mining Co., California..	371
Judd, E. G.....	371	Kennedy Mining Co., Nevada....	371
Judge Co.....	271	Kennedy Valve Manufacturing Co.....	281, 283
Juniper Mining Co.....	371	Kennedy, W. J.....	302
Justice, Bateman & Co.....	328	Kenney Co.....	417
Justice Mining Co.....	371	Kenney, S. H., & Son.....	314
Juvenile Literature Publishing Co.	271	Kentucky Agricultural Experiment Station.....	314
K. & W. Co.....	288	Kenny, Seth, & Son.....	352
Kaelin, C. S.....	248	Kentucky Bluestone Co.....	371
Kahl, Charles.....	371	Kentucky Construction Co.....	371
Kanaka Mining Co.....	371	Kentucky Fluor Spar Co.....	371
Kansas City and Memphis Rail- way and Bridge Co.....	294	Keppler & Schwarzmnn.....	271
Kansas Farmer Co.....	271	Kerr, Clarence E.....	280
Kansas Horticultural Society.....	337	Kerr, G. G.....	314
Kaolin Co.....	371	Kessler Bros.....	371
Kapp & Street.....	350	Kester Electric Manufacturing Co.	288
Karnowsky, W.....	302	Key, A.....	337
Katlinsky, A. L.....	271	Keyes, W. S.....	353
Kaufman Fertilizer Co.....	304	Keyless Lock Co.....	393
Kaufman, J. C.....	314	Keystone Engineering and Manu- facturing Co.....	281
Kealing, H. T.....	271	Keystone Gold Mining Co.....	371
Kearcher, L. M.....	314	Keystone Marble Co.....	371
Kearney & Foot Co.....	285, 391	Keystone Quarries.....	371
Keefe, D. G.....	314	Kicking Horse Mining Co.....	371
Keeler, Mrs. Charles.....	395	Kieley & Muler.....	397
Keen, Dora.....	420	Kiger, R. C.....	314
Keenan, Sophie Gaskell.....	395	Kilborne, F. L.....	314
Keener, M. M.....	328	Kilen, A. R.....	314
Keeney, J. W.....	314	Killen, J. S.....	314
Keith, George E., Co.....	401		
Keith, W. C.....	337		

	Page.		Page.
Killian, G. H	314	Kofoid, C. A	347
Kilmer, H. E	271	Kohler, John	314
Kimery, J. T.	337	Kohler, W. A	314
Kimball & Thompson	261	Kohlmann, Louis	328
Kimball, George A	298	Kohn, J. J	314
Kimball	261	Koiner, W. F	314
Kimble Estate	350	Koopman, August	392
Kindergarten Literature Co	271	Koopman, Augustus	248
King Bridge Co	295	Koser, D. C	314
King, Columbus	337	Koshland, M. S	328
King, F. S	256	Kosminsky & McFaddin	328
King, J. B	328	Kost, Frederick W	248
King, J. C. E	371	Koster, John L	353
King, J. M	328	Kraft, Herbert, Co	337
King, Julius, Optical Co	278, 397	Kramer, G	314
King Mining Co	371	Kronberg, Louis	248
Kingsley, Elbridge	256	Kruell, Gustav	257
Kinsman, F. E	290	Kubicek, M	337
Kirk, H. B., & Co	354	Kudo, M	302
Kirk, W. H	371	Kuichling, Emil	295
Kirsch, P. H	347	Kunz, George F	239, 371
Kirtley Tunnel Co	371	Kutnow, S., & Bro	402
Kitson, Arthur	392, 398	Labar, Wesley	337
Kitson, Henry Hudson	259	Labor Statistics, Massachusetts State Bureau of	407
Kitterman, Enos	337	Labor Statistics of Maine	409
Kjar, J. C	314	Lackawanna Iron and Steel Co ...	371
Clapp, Mrs. William	405	Lackawanna Lubricator and Manu- facturing Co	281
Klee, John	392	Ladd & Clement	371
Klein Bros	314	La Farge, John	248
Klein, M., & Sons	291	Lagai, George	279
Kline, J	371	Laird, Schober & Co	401
Klondike Mining Co	371	Laird, Morton & Co	409
Knapp, S. A	371	Laison, L. M	314
Knauer, Erhard	271	Lake, H. W	371
Knickerbocker, Willis	302	Lake Keuka Wine Co	353
Knight, Jesse	371	Lake, Levin	302
Knight, John W	371	Lake Shore and Michigan South- ern Railway Co	314
Knight, Louis Aston	248	Lake Superior Consolidated Iron Mines	371
Knight, Ridgway	248	Lakon Transformer Co	288
Knight, Wilbur C	371	Lamartine Mining Co	371
Knights of the Golden Eagle	413	Lamb, A. H	314
Knights of Malta	413	Lamb Factory, American Bicycle Co	296
Knights of the Maccabees	413	Lamb, J. & R	392
Knipp, John C., & Bro	393	Lambert Pharmacal Co	402
Knoop, Frerichs & Co	328	Lambert Typewriter Co	264
Knopf, S. A	279	Lambie, W	314
Knox, Charles B	350	Lamont, Fred G	322
Knox, Frank H	271	Lampton, A. P	314
Kny, Richard	279		
Kny-Scheerer Co	279, 304		
Koch, G. W., & Son	392		
Kochs, Theodore A., Co	393, 403		
Koenig, Adolph	271		

	Page.		Page.
Lancaster School	420	Lee Injector Manufacturing Co...	281
Landis, J. M.	314	Lee, Robert E.	328
Landis Tool Co.	285	Leffingwell, Charles W.	272
Lang, Jacob.	314	Le Grand Quarry Co.	372
Langdon, Palmer H.	271	Lehigh Coal Mining Co.	372
Lanston Monotype Machine Co.	264	Lehigh University.	239
Laplace, Ernest	279	Lehigh Valley R. R. Co.	414
La Rash, S. D.	337	Lehnert, G. A.	314
Large Distilling Co.	354	Leisenring, John, Manufacturing Co.	286
Larimore, J. J.	314	Leister, W. Hammond.	302
Larson, L. A.	314	Leiad & Falconer Manufacturing Co.	286
Larson, A.	371	Le Maitre Optical Co.	278, 397
La Sal Copper Mining Co.	371	Lembeck & Betz, Eagle Brewing Co.	354
La Sal Mining Co.	372	Lemmon, H. A.	372
Lasher & Osborne	271	Lemoine, William.	372
Last Dollar Mining Co.	372	"Lend a Hand"	421
Laswell, J. W.	372	Lenz, Henry	314
Later, P.	314	Lenz, Henry	328
Latham Machinery Co.	264, 271	Leonard, Anna B.	395
Lathbury & Spackman.	293	Leonard, C. N.	337
Lathrop, Francis	248	Leonard, Daniel.	328
Lathrop, Frank	392	Leonard, Genevieve	395
Lathrop, W. L.	248	Leonard, Harriet N.	395
La Tosca Mining Co.	372	Leonard, P. H.	372
Laurence, Sturgis.	395	Leonard & Ellis.	281, 402
Lavalle, John	395	Leonhardt Wagon Manufacturing Co.	298
Lawler & Wills	372	Leopold, Nathan F.	372
Lawrence, D. G.	314	Lepper, G.	372
Lawrence, George R.	265	Leschbrandt, E.	302
Lawrence, Stephen B.	393	Leschinske, Robert.	372
Lawrence, W. J.	372	Leslie, P. C.	328
Lawrence, W. W., & Co.	402	Letterman, D. A.	337
Lawrence Sewerage Building	295	Levi, M. P.	328
Lawson, Adele V.	395	Levy, H. M.	372
Lawyer, Rufus	337	Levy, Louis Edward.	264
Lea Brothers & Co.	271	Levy, Max.	265
Lea, F. H.	328	Lewis, Arthur.	248
League for Social Service (col. ex.) .	413	Lewis, D. W.	350
League for Social Service, New York	415	Lewis, J. N.	314
League for Social Service, Salva- tion Army, New York	416	Lewis, O. K.	314
Leaming, P. S.	314	Lewis, W. L.	350
Leas & McVitty	403	Lexington Coal Mining Co.	372
Leavitt, Charles W.	295	Libby, McNeil & Libby.	348, 350
LeBlond, The R. K. Machine Tool Co.	285	Liberty Silk Co.	400
Leckenby, A. B.	314	Liddell, J.	315
Le Count, William G.	285	Liebmann's Sons, Brewing Co.	354
LeClanche Battery Co.	289	Life Publishing Co.	272
Lee, Homer.	248	Light of Truth Publishing Co.	272
Lee, Samuel & Co.	328	Lilienthal, A.	372
Lee, T.	372		

	Page.		Page.
Lincoln Granite Co.....	372	Lord, Julia P	328
Lincoln Springs	354	Lord & Thomas	272, 277
Lindeman, Clara C.....	395	Lord, Hewlett & Hull	261
Linder, H	406	Lorraine Manufacturing Co	399
Lindsay, W. E.....	372	Los Alamitos Beet Sugar Co.....	352
Link Belt Engineering Co	293, 409	Los Angeles Art Leather Co.....	406
Linton, Edwin	348	Los Angeles Chamber of Commerce	350
Linton, Harvey	293	Los Angeles Granite and Brown-	
Linton, W. D	337	stone Co	372
Linton, W. D	372	Loseke, G	315
Lippencott Steam Specialty Co ...	283	Lost Lillie Mining Co.....	372
Lippincott, J. B., Co	272, 372	Lothrop & Higgins	340
Lipscomb, A. S.....	328	Lothrop Publishing Co	272
Lipscomb, B. S.....	328	Lott, C. T	372
Lipscomb, J. M	328	Loud & Gerling	350
Liquid Air Refrigeration and Power		Louden, William	315
Co	348	Louisiana Sugar Planters' Asso-	
Listie Mining Co	372	ciation.....	352
Little, Joseph H	302	Louisville Leaf Tobacco Exchange.	404
Little, W. P	372	Lovelocks, G	372
Little, Brown & Co.....	272	Low, George P	272
Little, John, Mining Co.....	372	Low, Will H	248
Littman, Felix	404	Low Moor Iron Co	372
Living Age Co	272	Lowe, Henry P.....	372
Livingston Gold Mining Co	372	Lowe, T. H	372
Livingstone, A. H	337	Lowell Textile School	407
Livingstone, M. W	315	Lower Mammoth Mining Co	372
Llewellyn, Frank J	295	Loweth, Charles F.....	295
Llewellyn, H. H	372	Lowman, W. M.....	315
Locke, Caroline T	248	Lowry, J. G	315
Locke, Fred M.....	288	Lozier Manufacturing Co.....	302
Locke Regulator Co	282, 283	Lubin, Siegmund	265, 278, 397
Lockwood, Wilton	248	Lucas, Albert P	259
Locomotive Co. of America	296	Lucas, J. L	337
Locomotive Engineers, Brother-		Lucas, John, & Co.....	412
hood	409	Luce & Manning	328
Locomotive Fireman's Magazine..	409	Luce, W. D	372
Locomotive Engineers' Mutual Life		Lucky Guss Mining Co	372
and Accident Insurance Associa-		Ludlow Manufacturing Co.....	412, 413
tion	413	Ludlow Valve Manufacturing Co .	283
Loeser's, Charles McK., Sons.....	272	Ludwig, B. T. J.....	328
Logan, H. R	372	Ludwig & Co.....	280
Logan, J. A	328	Lukens, T. P.....	372
Lone Pine Mining Co.....	372	"Lumber"	409
Long, Adelaide H	397	Lumber Trade Journal	272, 409
Long, J.....	372	Lunacy commission, New York ..	420
Long, Marion W	395	Lunacy hospital.....	420
Long Dale Mining Co.....	372	Lund, Waldemar.....	302
Long Island Brewing Co.....	354	Lunkenheimer Co.....	282, 397
Long Island R. R. Co.....	295	Lupton, S. L	337
Long Valley Coal Co	372	Lutheran Ministerium of New	
Lopez, Charles	406	York	272
Lorain Steel Co	288	Lyden, M. J	302

	Page.		Page.
Lyman School	420	Malta, George H	353
Lynch, B. McN	328	Mammoth Mining and Milling Co.	373
Lynn, George W	328	Manchester, Elbert	337
Lynn Incandescent Lamp Co.....	290	Mandle, I.....	373
Lyon, Leonidas S., jr	303	Manget, John A.....	315
Lyon, Robert P	409	Manhattan Brass Co	391, 404
Lyon, W. G	315	Manhattan Mining Co	373
Lyons, J.....	328	Manhattan Optical Co	278, 397
Lyons, S. C., & Bros.....	372	Manhattan Storage and Warehouse	
Lytle, J. W.....	315	Co	409
Lytton Springs Sanitarium Co	418	Mann, C. M.....	353
Mabee, George W	373	Mann, J	315
Macarty, W. W	328	Mann, T. R.....	373
MacCarter, Henry.....	249	Mannello, Angelo	280
MacChesney, Clara.....	249	Manufacturers' Record.....	272, 409
MacEwen, Walter.....	249	Maple Flooring Manufacturers'	
MacFarlane, Alexander.....	239	Association	346
MacIlhenny, C. M	249	Marcariar & Co	351
MacKane, Mrs. H. W.....	400	March, John A.....	315
MacKin, Mead & White.....	261	Marcks, A	315
Mackintosh, Hemphill & Co	390	Marine Record Publishing Co	272
MacKubin, Florence.....	249	Marine Review Publishing Co....	272
Macmillan Co	272	Marinar, F. C.....	315
MacMonnies, Frederick.....	259	Marion Improvement Co.....	373
MacMonnies, Mary F.....	249	Marion Mining Co.....	373
MacNeil, Carol Brook.....	259	Marion Steam Shovel Co	293
MacNeil, H. A	259	Markel, E	315
Macullar Parker Co.....	409	Markert, J. M.....	315
Macy, John W	280	Markham, R.....	315
Mage, Mrs. J.....	337	Marks, A. A	279
Magee Furnace Co.....	397	Marks, George E.....	279
Magic Food Co	315	Marks, William L	279
Magnerson, J. F.....	303	Markt & Co.....	286
Magoun, F. P	303	Marquardt, Francis X	395
Mahan Produce Co	337	Marsh, Bessie	352
Mahan, W. H.....	329	Marsh, F. D	249
Mahoney Manufacturing Co.....	397	Marsh, John N.....	303
Mahoning Iron and Steel Co	373	Marshall Brothers	337
Maine Condensed Milk Co	323	Marshall, William.....	288, 291
Maine Insurance Report	414	Martha Washington Mining Co....	373
Maine Railroad Commission.....	409	Martin, E. J	315
Maine Red Granite Co	373	Martin, F. M.....	329
Maine State Pomological Society..	337	Martin, G. S	315
Maine and New Hampshire Gran-		Martin, H. M	315
ite Co	373	Martin, Homer.....	249
Makeig, S. I	329	Martin, T. B	315
Malaga Cooperative Co	350	Martine, C. H.....	373
Malcolmson, Charles T	290	Mary McKinney Mining Co	373
Mallett, D. F.....	272	Maryland agricultural experiment	
Malone, T. E.....	337	station	315
Malone & Smith.....	350	Maryland Coal Co.....	373
Malones Mining Co.....	373	Maryland Distilling Co	354
Maloney, W. A	329	Maske, J. B.....	329

	Page.		Page.
Mason, E. J.	315	McBride, James N.	373
Mason, Elizabeth.	395	McBride, John A.	328
Mason, J. C.	315	McCall, I. G., and Dickson, J. A. .	272
Mason, Miss M. M.	395	McCann, Thomas H.	298
Mason, Perry, & Co.	272	McCardell, A. C.	315
Mason, Thomas.	272	McCardell, J. R., & Co.	298
Mason, Walter.	337	McCarthy, Eugene.	348
Massachusetts board of Paris ex- position managers.	348	McCarty, J.	373
Massachusetts chief of district po- lice.	412	McCay Engineering Co.	291
Massachusetts, Commonwealth of.	295	McClendon, R. T.	315
Massachusetts Institute of Tech- nology. 239, 241, 272, 373		McCloud, J. A.	315
Massachusetts insurance commis- sioner.	413	McClure, The S. S., Co.	272
Massachusetts New Church Union.	272	McCollough, U. S.	337
Massachusetts savings bank com- missioners.	413	McConway & Torley Co.	298
Massachusetts School for Feeble- Minded.	421	McCord, J. W.	329
Massachusetts State Board of Agri- culture.	332	McCormick & Gray.	272
Massachusetts State Farm.	419	McCormick Harvester Machine Co. .	305, 398, 399, 411
Massachusetts, State of.	303	McCoy, James H.	373
Massenge, August.	303	McCreery, R. M.	395
Massey, B. F.	329	McCulloch, J. W.	354
Masson, Paul.	353	McCune, G. E.	272
Mather, Fred. 347, 348		McCutchen, W. W.	315
Matheson, William J., & Co.	402	McDonald, M.	315
Mathews, H. H.	373	McDonald, R.	329
Matson, W. H.	315	McDonald, W. P.	395
Matthews, Owen.	315	McDondland, George T.	282
Matthews, W. R. H.	315	McDonough, T.	373
Maude, Charles A.	337	McDonough School.	420
Mauger & Avery.	329	McDowell Government Drafting Machine Co.	399
Mauney, W. A.	329	McGeoghegan, J.	373
Maurer, A. H.	249	McGill Mining Co.	373
Maxey, S. C.	329	McGraw Publishing Co. 272, 291	
Maxwell Land Grant Co.	373	McGregor, J. D.	315
May, J. E.	337	McGuire, James C.	295
May, W. H.	329	McHenry, O.	315
Mayer, L. W.	373	McInturff, C. R.	337
Mayers, Jacob.	272	McIntyre, Patsey.	329
Mayhew, Julia H.	395	McIvers, C. C.	353
Mayhugh, J. S.	373	McKay, R. M.	329
Maynard, E. A.	315	McKee, Fuller & Co.	298
Maynard, Frank, jr.	315	McKeown, S. H.	337
Maynard, G. W.	249	McKerron, J. A.	297
Maynard, Guy.	249	McKim, Alexander Rice.	293
McAlester Coal and Mining Co. ...	372	McKinley Mining Co.	373
McAlister, J. W.	315	McKinley, William, souvenir com- mittee.	272
McBeth, J.	315	McKinnon, A. J.	329
		McKinnon, James W.	303
		McKinnon, L. D.	329
		McLane, George B.	373
		McLaughlin, M. Louise.	395

	Page.		Page.
McLean, Howard A., Mrs.....	395	Meyer, F. W.....	315
McLean, John R.....	373	Meyer, Henry G.....	273
McLendon, J. R.....	329	Meyer, John.....	353
McLeod, Ward & Co.....	290	Meyer, John H.....	279
McMahon, Porter & Co.....	373	Meyer, J. S.....	273
McManus, Thomas F.....	303	Meyer, Willy.....	279
McMaster, Mary.....	395	Meyers, Louis, & Sons.....	401
McMenamin & Co.....	350	Meyercord Co.....	264
McNary, J. C.....	329	Meyrowitz, E. B.....	290, 291
McNary, J. S.....	329	Mial, Millard.....	329
McNeal, J. M.....	315	Michelson, A. A.....	239
McNear, G. W.....	315	Michigan Artisan.....	273
McPeters, C. L.....	337	Michigan Beet Sugar Association.....	352
Mead, William.....	373	Michigan Board of Agriculture.....	409
Meade, Nathaniel W.....	272	Michigan Carbon Works.....	351, 402
Meador Furniture Co.....	393	Michigan Horticultural Society.....	409
Meadville Distilling Co.....	354	Michigan Mining Co.....	373
Meakin, L. H.....	249	Michigan Reports.....	409
Meek, Seth Eugene.....	348	Michigan School of Mines.....	373
Meitz & Weiss.....	282	Michigan Seed Co.....	340
Melchers, Gari.....	249	Michigan State Agricultural Col- lege Experiment Station.....	337
Melville, George W.....	422	Michigan Stove Works.....	397
Melvina Mining Co.....	337	Midas Gold Mining and Milling Co.....	373
Mendenhall, T. C.....	239	Midland Publishing Co.....	273
Mengle, Mrs. J. C.....	400	Miehle Printing Press and Manu- facturing Co.....	264
Menomonee Hydraulic Press Brick Co.....	373	Miehle, Robert.....	264
Mensch, Paul, & Co.....	272	Migilavacca, G.....	353
Mercantile Adjuster Publishing Co.....	272	Migman, Berryman & Ford.....	373
Merchant Tailors' National Ex- change.....	400	Milam, B. C., & Son.....	348
Merck & Co.....	272	Miley, A. C.....	351
Mergenthaler Linotype Co.....	264	Milford Pink Granite Co.....	373
Merithew, J. C.....	353	Milford Shoe Co.....	401
Merriam, A. F.....	373	Mill Creek Coal and Coke Co.....	373
Merriam, G. & C.....	272	Miller, Adam, jr.....	315
Merriman, C. S.....	303	Miller, C. (Ind.).....	316
Merriman, J. H.....	337	Miller, C. (Mo.).....	316
Merritt, E. T.....	337	Miller, Clark A.....	303
Merritt & Chapman Derrick and Wrecking Co.....	409	Miller, C. D.....	316
Mertz, George, & Sons.....	392, 393	Miller, C. W.....	329
Messenburg, F.....	315	Miller, D.....	316
Metallic Flexible Tubing Co.....	391	Miller, G. P.....	337
Metcalf, J. N.....	315	Miller, J. J.....	337
Metcalf, W. L.....	249	Miller, J. M.....	329
Metich, J.....	373	Miller, Mrs. L. K.....	273
Metropolitan Business College.....	241	Miller, O. A.....	399
Metropolitan Park Board.....	295	Miller, William.....	257
Metropolitan Sewerage Board.....	295	Miller, DuBrul & Peters Manufac- turing Co.....	404
Metropolitan Water Board.....	295	Miller Publishing Co.....	273
Meyer Brothers.....	409	Miller Rubber Manufacturing Co.....	279
Meyer, C. F. G.....	273	Miller, W.....	337

	Page.		Page.
Miller, W. S	337	Monarch Governor and Machine	
Millet, Francis D	249	Co	283
Millner, J	373	Monarch Manufacturing Co	283
Mills Novelty Co	278	Monongahela River Consolidated	
Milman, George A	337	Coal and Coke Co	374
Milton, R. K	329	Monson Maine Slate Co	374
Milton Bradley Co	236	Montana Coal and Coke Co	374
Milwaukee Cement Co	373	Monte Cristo Mining Co	374
Milwaukee Electric Co	288	Montfort, Helen E	395
Milwaukee Factory, American		Montfort & Co	273
Bicycle Co	296	Montgomery, A	337
Milwaukee Harvester Co	305	Montgomery, George W	329
Mine Hill Mining Co	373	Monthly Register	420
Mine Hill Quarry Co	373	Monticello Wine Co	353
Mine la Motte Mining Co	374	Moonshine Mining Co	374
Miner, E. N	273	Moore, Aaron	329
Minge, C. H., & Co	329	Moore, Chas	338
Minnesota Iron Co	374	Moore, Matt	329
Minnesota Mining Co	374	Moore, T. B	329
Minnesota Sandstone Co	374	Moore, W. E	329
Minnehaha Vineyard	351	Mooreland, Mrs. W. C., jr	395
Minor, Robert C	249	Moran Brothers Co	409
Mirabel Standard Mining Co	374	Moran, Horace	280
Mississippi River Commission	293,	Moretti, G	406
	295, 303	Morgan, Ada White	395
Missouri Geological Survey	409	Morgan, D. W. C	374
Missouri Granite Co	374	Morgan, E. D	303
Missouri Lumber and Mining Co	409	Morgan, J. Pierpont	303
Missouri Pacific Railway Co	409, 411	Morgan, W. J., & Co	264
Missouri Horticultural Society	337	Morgan Machine Co	286
Missouri Valley Bridge and Iron		Morgan Milling Co	374
Works	295	Morningstar, P. H	316
Mitchell, A. E	316	Morning Star Mining Co., Colo-	
Mitchell, Charles	374	rado	374
Mitchell, E. B	329	Morning Star Mining Co., Cali-	
Mitchell, Joseph D	329	fornia	374
Mitchell, L. M	329	Morrell, J. A	374
Mitchell Co., John J	264, 273, 399	Morrin, J. & L	316
Mitchem, Wm	337	Morris	261
Mittag & Volger	264	Morris, E. E., & Co	390
Mittallbury Coal and Coke Co	374	Morris, E. K., & Co	404
Mobile Cotton Exchange	329	Morris, J. B., Foundry Co	391, 404
Model Heating Co	397	Morris, J. F	316
Modern Miller Co	273	Morris, Thomas	32
Modern Woodmen of America	414	Morris, Nelson, & Co	351
Modesti & Avila	374	Morris Run Coal Co	374
Modjeski, Ralph	295	Morrisdale Coal Co	374
Moffat, F. L	316	Morrison, E. A	374
Moffett, J. M	316	Morrison, Gilbert B	236, 238
Mollie Gibson Consolidated Mining		Morse, H	374
Co	374	Morse, T. Vernetta	273
Monarch Factory, American Bicy-		Morse Twist Drill and Machine Co	286
cle Co	296	Morton Manufacturing Co	286

	Page.		Page.
Moseley, Albert R.....	329	Muzzy Brothers	402
Moseley & Stoddard Manufactur- ing Co	305	Myers, Calvin.....	338
Mosher, Charles D	282, 303	Myers, D. W.....	316
Moss, Jerome	374	Myers, E. L.....	329
Mossberg & Granville Manufactur- ing Co	286	Myles Salt Co	374
Motley, Thornton N.....	303	Nash, J. D	316
Mott, J. L., Iron Works.....	397, 418	Nasmyth, Mrs. Percy.....	395
Mott, John M.....	236	Nathan Manufacturing Co.....	282
Moulton, Joseph	338	National Association of Photo- Engravers.....	264
Mountain Copper Co.....	374	National Bank of Commerce.....	374
Mountaineer Mining Co.....	374	National Biscuit Co.....	349
Mount Airy Granite Quarries.....	374	National Carbon Co.....	290
Mount Carbon Coal Co.....	374	National Cash Register Co..	278, 404, 413
Mount, C. F	338	National Commission of Public Health.....	418
Mount Copper Co	374	National Congress of Mothers.....	415
Mount Diablo Mining Co.....	374	National Fraternal Congress.....	414
Mount Hope Mine.....	374	National Fraternal Association ...	420
Mountford, Elijah.....	374	National German-American Teach- ers' Seminary	236
Mount Sinai Hospital.....	421	National Institute Dental Peda- gogy.....	279
Mouse River Lignite Coal Co.....	374	National Iron and Steel Publish- ing Co	273
Mowry, F. J	273	National Laundry Journal	410
Moyer, J. S., & Co	374	National Lead Co.....	374
Mount Holyoke College.....	239	National League of Mineral Paint- ers	395
Mudges, F. E	316	National Machine Co	264
Mulhauser, The F., Co.....	399	National Malleable Castings Co...	298
Muhrman, Henry H.....	249	National Nickel Co	375
Mulford, H. K., & Co.....	418	National Printing Co.....	273
Muller, L., jr.....	273	National Prison Commission.....	420
Mumford, A. W.....	273	National Railway Publication Co.	273, 298
Mumma, A. L.....	316	National Specialty Co.....	305
Munger, E. E	279	National Starch Manufacturing Co.....	316, 349
Municipal architecture of Boston..	421	National Steel Co.....	375
Municipal Engineering Co	273	National Tube Works	299
Munn & Co	273	Natural Mineral Water Co.....	418
Munsell, Eugene, & Co.....	288	Naumkeag Buffing Machine Asso- ciation	399
Munster, A	295	Naylor, J. L.....	316
Muralo Co	402	Neal, A. S.....	316
Murdock, William A	374	Neal, D	316
Murphy, Arthur.....	374	Neal, Fanny.....	395
Murphy, F. M.....	374	Neal, John R., & Co	351
Murphy, James Shields.....	273	Neal, Mary Alley	395
Murphy, J. Francis.....	250	Neal, U. W.....	316
Murphy, S. H.....	316	Nebraska State Horticultural So- ciety	338
Murray, Daniel.....	415	Needham, Charles Austin.....	250
Murray, M. F., & Sons.....	338		
Murray, Samuel.....	259		
Murrell, George C.....	338		
Muscovite Mica Co	274		
Mutual Aid Society.....	412		
Mutual Life Insurance Co. of New York	414		

	Page.		Page.
Neeley, A. L.....	329	New Idria Quicksilver Mining Co.....	375
Neely, F. L.....	316	New Jersey Bank Reports.....	414
Neff, Ira.....	338	New Jersey Zinc Co.....	375, 390
Neff, J. H.....	375	Newland, Wm.....	338
Neff, John.....	316	Newman, W. B., Mrs.....	250
Negus, T. S. & J. D.....	423	Newman, R. L.....	250
Neidy, J.....	375	New Mexico Agricultural College.....	338
Nelson.....	316	New Orleans Charity Hospital.....	420
Nelson, A.....	338	New Orleans Agricultural Experiment Station.....	316
Nelson, E. W.....	347	New Orleans Board of Trade.....	316
Nelson, J. A.....	338	New Process Rawhide Co.....	283, 288
Nelson, M.....	250	New Salt and Borax Co.....	375
Nelson, N.....	316	New Sapphire Syndicate.....	375
Nelson, R. C.....	316	Newsboy Mining Co.....	375
Nelson, Hall & Co.....	305	Newton, G. G.....	316
Nelson Manufacturing Co.....	413	Newton, H. A.....	375
Neodesha Mining Co.....	375	New York Air Brake Co.....	299
Neostyle Envelope Co.....	404	New York Agricultural Experiment Station.....	338
Neostyle Manufacturing Co.....	264	New York Blower Co.....	398
Nepera Chemical Co.....	265	New York Boat Oar Co.....	303
Neptune Meter Co.....	283	New York Car Wheel Works.....	299
Nesbit, J. S.....	375	New York Catholic Protectory.....	420
Netter, David, & Co.....	354	New York, city of.....	295
Nettie Mining Co.....	375	New York Daily Times.....	273
Nettleton, Walter.....	250	New York Education.....	236
Neufield, Emil M.....	397	New York Juvenile Asylum.....	420
Nevada and Boston Co.....	375	New York Lumber Trade Journal.....	273
Nevada commission to Paris Exposition.....	375	New York Musical Courier Co.....	273
Nevada, State of.....	375	New York Novelty Co.....	397
New Almaden Quicksilver Mining Co.....	375	New York Orphan Asylum.....	420
New Bedford Boiler and Machine Co.....	282	New York Public Baths.....	418
New Bedford Oil Co.....	348	New York Society for Improving Condition of Poor.....	420
New Bedford Textile School.....	407	New York State banking department.....	414
Newby, Thomas T.....	338	New York State commission to Paris Exposition.....	323, 338
Newcomb, B. M.....	375	New York State Industrial School.....	418
Newcomber, J. L.....	329	New York State insurance department.....	414
New Departure Trunk Co.....	406	New York State Museum.....	375
New Dunderberg Mining Co.....	375	New York State Paris commission.....	351
Newell, A.....	316	New York State Reformatory.....	421
New England Co.....	399	New York Teachers' Magazine.....	236
New England Brown Stone Co.....	375	New York Trade School.....	241
New England Crutch Co.....	279	New York University School of Pedagogy.....	239
New England Gas and Coke Co.....	375	New York Yacht Club.....	303
New England Hospital for Women and Children.....	421	New York and Ohio Co.....	288, 290
New England Publishing Co.....	273		
New Hammondsport Wine Co.....	353		
New Haven Manufacturing Co.....	286		
New Home Sewing Machine Co.....	399		
Newhouse & Weir.....	375		

	Page.		Page.
New York and Rosendale Cement Co	375	Northrup, Henry S	392
Niagara Mining Co	375	Northwestern Grass Twine Co..	393, 399
Nichols, E. B., Miss	400	Northwestern Miller	410
Nichols, H. W	375	Norton, C. S., Blue Stone Co	378
Nicholls, Rhoda Holmes	250	Norton, William E	250
Nicholson, W. H., & Co	286	Norton Electric Installation Co...	291
Nicodemus, C. A	316	Norton Emery Wheel Co	286
Niemolier, A. F	316	Norwich Nickel and Brass Co	399
Niles Tool Works	286	Norwood, W. M	338
Nisi Prius Mining Co	375	Notla Consolidated Marble, Iron and Tale Co	378
Nix, C. H	375	Nurses and Nursing	420
Nix, F. M	329	Nourse, Elizabeth	250
Nixon, G	375	Nourse, Mary	395
Noble Bros	351	Noyes, G. R	316
Noble, William	375	Noyes, Read & Co	401
Nolan, H. Jennings, Miss	400	Nuque, Gustave	303
Nolan Publishing Co	273	Nyack factory, American Bicycle Co	296
Noland, B. R	329	Oak Hill Mining Co	378
Noon, A. A	375	Oakes Mining Co	378
Norcross Bros	375	Oakley, E. P	316
Norfleet, F. S	329	Oberlin College	239
Normal Art School	240	Obery, Mrs. Christine M	400
Normal Instructor	236	O'Brien, H. J	303
Normal-school system:		O'Brien, James F	329
New York	236	Ochtman, Leonard	250
Massachusetts	236	Ockerson, J. A	295
Normal school	236	O'Connor, Con	378
North Bloomfield Gravel Co	375	Oelrich, Herman	316
North Bloomfield, Buffalo factory, American Bicycle Co	296	Oelrich, Herman, & Bro	316
North Bloomfield, Empire Mining Co	378	Oesterlein Machine Co	286
North Bloomfield, Monson (Me.) Slate Co	378	Ogilvie, Theodore	329
North Bloomfield, Pacific Coal Co	378	Ohio Electrical Specialty Co	288
North Bloomfield, Star Mills	349	Ohio Fire Brick Co	378, 390
North Bloomfield, Star Mining Co., California	378	Ohio State Horticultural Society..	338
North Bloomfield, Star Mining Co., Colorado	378	Ohio Tool Co	391
North Brothers Manufacturing Co	348, 391	Ohmann-Dumesnil, A. H	273
North Carolina department of agriculture	338	Ohr, George E	395
North Carolina Paris commission	376-378	Oil Well Supply Co	282, 283, 378
North Carolina State board of agriculture	341, 347, 376	O'Kane, J	297
North Carolina State Museum	378	Oklahoma Cotton Compress Co...	329
Northcote, Stafford M	257	Olcan, Felix	395
Northern Coal Co	378	Old Dominion Copper Co	379
Northern Michigan Marble Co	378	Old Dominion Mining Co	379
		Olden Fruit Co	338
		Old Jordan and Galena Mining Co	379
		Oleta Marble Co	379
		Oliphint, T. W	329
		Oliver Chilled Plow Co	305
		Oliver, Dave	379
		Oliver, Greenwood K	390

	Page.		Page.
Oliver, John L	329	Ozark Orchard Co	338
Oliver Typewriter Co	264	Ozark Mining Co	379
Oliver Iron Mining Co	379	Pacific Coast Borax Co., Mojave	
Olsen, Tinius & Co	283	Desert, Cal	379
Olzewski, Anton	273	Pacific Coast Borax Co., San Fran-	
Omaha and Grant Smelting Co ...	379	cisco, Cal	379
Omeyer, Emile	303	Pacific Coast Condensed Milk Co .	323
Oneida Community, Kenwood,		Pacific Coast Elevator Co	317
N. Y	346	Pacific Copper Co	379
Oneida Community, Niagara Falls,		Pacific Creameries	323
N. Y	391	Pacific Press Publishing Co	274
Oneida National Chuck Co	286	Pacific Steam Whaling Co	351
O'Neill, William E	303	Packard's Business College	241
Ontario and Western Railway Co.	379	Page Brothers & Co	422
Ontario Silver Mining Co	379	Page, W. S.	338
Ophir Mining Co	379	Pahannes, Isaac	379
Orange Judd Co	273, 410	Paine, Cassius M	274
Orange Memorial Hospital	421	Paine, A. J	303
Order of Scottish Clans	414	Pain's Fireworks Co	422
Orenbeck, Frederick	329	Paist, Mrs. H. B	396
Oregon agricultural experiment		Paiste, H. T., Co	290
station	316	Palmer, Mrs. Lucia A	274
Oregon Coal and Navigation Co...	379	Palmer, Walter L	250
Oregon Improvement Co	379	Palmtag, William	353
Oregon Railroad and Navigation		Pan Confection Co	352
Co	316	Pape, Eric	250
Ore Knob Mining Co	379	Parfet, G. W	379
Ores and Metals	410	Parke County Coal Co	379
Ormsby, F. E	273	Parke, Davis & Co	418
Oro Bella Mining Co	379	Parker, J. O	338
Orr, J. W	329	Parker, J. R	329
Orton, Edward, jr	379	Parker, John M	329
Orvis & Hawkes	282	Parker, W. U	318
Osbon, Mrs. E. A	396	Parkhurst, H. W	299
Osborne, D. M., & Co	305	Parkinson, W. W	318
Osborne, Seager & Co	379	Parkinson & Kengla	274
Osgood Art Colortype Co	264, 266	Parks, J. S	318
Osgood, Mrs. Worth	396	Parks, S. F	379
Oskaloosa Coal Co	379	Parrett, J	379
Oster Manufacturing Co	286	Parrish, Clara W	250
Ostermeyer, William	303	Parrish, Maxfield	250
Ostrom, John N	295	Parry, E. L., & Sons	379
Otis Elevator Co	288, 412	Parry, R	379
Otto, John B	329	Parsons, James Russell	239
Outing Publishing Co	273	Partridge, A. E	274
Outlook Co	273	Partridge Carbon Works	288
Overland Mining and Milling Co..	379	Pasadena Exhibition Association .	274
Overland Monthly Publishing Co.	273	Pass & Seymour	290
Overly, Laura S	396	Patchett, Joseph	338
Ovenstreet, J. R	317	Patent Office	415
Owen Machine Tool Co	286	Paterson Ribbon Co	400
Owl Commercial Co	404	Pathfinder Publishing Co	274
Oxley & Enos	290	Patrick, Carter & Wilkins	288, 290

	Page.		Page.
Patterson, C. W.....	379	Penrose Home Mining Co.....	379
Patterson, R. A.....	330	Peoria Corn Exposition.....	318
Pattison, A. S.....	318	Perfumo, P. B.....	379
Patton, Lena B.....	396	Perkins Co.....	379
Patton, R. H.....	318	Perkins Machine Co.....	286
Patton Coal Co.....	379	Perkins, Linscott & Co.....	401
Paugh, E.....	318	Perkins Switch Manufacturing Co..	290
Paul & Elliston.....	338	Perley, C. B.....	303
Pauper Institutions Department..	420	Perley, Mrs. M. E.....	396
Pawlich, J.....	318	Perrine, I. B.....	338
Paylor, John.....	338	Perrine, Van Dearing.....	250
Payne, J. C.....	318	Perry, Edward Delavan.....	239
Payne, John.....	338	Perry, Mathews & Buskirk.....	379
Payne, William R., & Co.....	330	Perry Pictures Co.....	236, 238
Peabody & Stearns.....	261	Perry, William.....	318
Peace Dale Manufacturing Co.....	399	Perth Amboy Terra Cotta Co.....	379
Peacock, A. L.....	318	Peteet, C.....	330
Pearce, Charles Sprague.....	250	Peterson, W. C.....	318
Pearce, Richard, Manager.....	379, 390	Pettingill & Co.....	274
Pearce, T. M.....	318	Pettinos Brothers.....	379
Pearl, A. Y.....	286	Pewabic Mining Co.....	379
Pearl, James.....	330	Peyton, Gill S.....	379
Pearmain, J.....	338	Phal, Richard.....	379
Pearson Machine Co.....	286	Pharmacist Mining Co.....	380
Pearson, W. M.....	338	Phelps Manufacturing Co.....	289
Peck, Grace H.....	396	Phelps, Pearl Waneta.....	396
Peck & Snyder.....	391, 405, 407	Phelps Publishing Co.....	274
Peddicord, John.....	318	Philadelphia and Reading R. R.	
Peddle, Caroline C.....	259	Co.....	414
Pederson, Peder.....	338	Philadelphia Business College.....	241
Peele, John B.....	330	Philadelphia College of Pharmacy..	274
Peeler, I.....	318	Philadelphia Commercial Mu-	
Peirce, W. E., & Co.....	341	seum.....	411, 415
Pelgram & Meyer.....	400	Philadelphia Consumers' League..	413
Pelicon Dives Mining Co.....	379	Philadelphia Electrical and Manu-	
Pelton Water Wheel Co.....	282	facturing Co.....	288
Pelzer Manufacturing Co.....	399	Philadelphia Hardware and Mal-	
Peerless Rubber Manufacturing		leable Iron Works.....	398
Co.....	282	Philadelphia School of Industrial	
Pencoyd Iron Works.....	390	Art.....	413
Pendleton, Andrew F.....	303	Philadelphia Trade League.....	410
Peninsula Horticultural Society..	338	Phillips, Charles C.....	330
Penn Mining Co.....	379	Phillips, C. S.....	347
Pennell, Joseph.....	250, 257	Phillips, J. M., & Son.....	318
Pennsylvania Coal Co.....	379	Phillips, Mary A.....	396
Pennsylvania Electric Co.....	291	Phillips, L. Vance, Mrs.....	396
Pennsylvania Railroad Co..	299, 379, 414	Phillips, P. R.....	318
Pennsylvania School Journal.....	236	Phillips, W. R.....	318
Pennsylvania Society for Preven-		Phillips & Clark Stove Co.....	398
tion of Cruelty to Animals.....	420	Phinney, C. S.....	338
Penny Provident Society.....	420	Phoenix, F. S.....	338
Penrod, E.....	379	Phoenix, Lloyd.....	303
Penrose, R. A. F.....	379	Phoenix Bridge Co.....	295

	Page.		Page.
Phoenix Horseshoe Co	391	Pleasant Valley Coal Co	380
Phoenix Packing Co	351	Pleasant Valley Wine Co	353
Phosphoria Phosphate Co	293	Pleacher, Andrew	303
Photographic Times Publishing Association	274	Plumb, Charles S	330
Photo-Materials Co	266	Plumb, Fayette R	391
Piano and Organ Supply Co	280	Plymouth Consolidated Mining Co	380
Piano Manufacturers Association ..	274	Plymouth Factory	296
Pickett, H. A	330	Pocono Laboratories	418
Picknell, W. L	250	Poet-Lore Co	274
Pierce, E. M., Miss	396	Polar Star Mining Co	380
Pierce, John	380	Political Science	274
Pierce, J. V	380	Pollock, W. A	330
Pierce, W	318	Pomeroy Brothers	404
Pierce, L. B	338	Pomona Terra Cotta Co	380
Pierce, O. R	338	Pond Machine Tool Co	286
Pigeon Roost Belt	380	Poole Brothers Publishing Co	380
Pike Manufacturing Co	380, 391	Poole's Granite and Marble Co ...	380
Pilgrim Mining Co	380	Poor, overseers of the:	
Pillow, W. H	338	Natick	420
Pillsbury-Washburn Flour Mills Co	318, 349	Worcester	420
Pinnacle Gold Mining Co	380	Poore, H. R	251
Pioneer Salt Works	352	Popular Educator, Boston	236
Pitt & Scott	295	Popular Photograph Co	266
Pittman, D. W	318	Porcher, Phillip G	330
Pitts, B. B., & Son	330	Porcher, W. D	318
Pittsburg and Lake Angeline Mining Co	380	Pordur, Phillip G	330
Pittsburg and Western Railway Relief Department	414	Porter, Benjamin C	251
Pittsburg and Wheeling Coal Co ..	380	Porter, Charles M	380
Pittsburg Coal Co	380	Porter, E. A	318
Pittsburg Coal Mining Co	380	Porter, H. K., Co	299
Pittsburg Crushed Steel Co	380	Porter, Taylor & Co	274
Pittsburg Junction Railroad Relief Department	414	Porter's Cooperative Co	412
Pittsburg Plate Glass Co	397	Portland Cement Co	380
Pittsburg Reduction Co	390	Portland Mining Co	380
Pittsburg Transformer Co	288	Post, Cornelia S	396
Pittsburg Writing Machine Co	264	Post, George B	261
Place, O. F	380	Post, Herbert	338
Placerville Gold Mining Co	380	Post, L. D	410
Plano Manufacturing Co	305	Postley, Clarence A	303
Plasterer, J. B	318	Poston, C. L., & Co	380
Plastic Kaolin Co	380	Postum Cereal Co	349
Platt, Charles A	251	Potomske Mills	399
Platt, E. B	338	Potter, W. W., Co	274
Platt, George F., & Son	338	Potter & Johnston Co	286
Platt, N. D	338	Potter-Kendall Co	274
Platt Pressed Brick Co	380	Poulson, P	318
Plattner, Joseph	318	Powell, Caroline A	357
Pleasant River Granite Co	380	Powell, Edwin C	274
		Powell, George T	338
		Power	410
		Powers, E. L., Co	410
		Powers, Joseph A	299

	Page.		Page.
Powers Regulator Co	398	Putnam, Eben	274
Prairie Creek Coal Co.....	380	Putnam, G. P., Sons.....	274, 381
Prang Educational Co.. 236, 238, 239,	240	Putnam, S. G	257
Pratt, A. C.....	380	Pyle, D. M.....	381
Pratt & Whitney Co.....	286	Pyle, Howard.....	251
Pratt Chuck Co	286	Pyramid Mining Co	381
Pratt, Reed & Co.....	280	Quartermaster's Department,	
Prentice Bros. Co.....	286	United States Marine Corps	423
Prentiss Vise Co.....	286	Q. & C. Co.....	286, 299
Prescott, E.....	330	Queen & Co.....	291
Prescott Mining Exchange	380	Queen County Stoneware Co	381
Press Pedagogic	237	Quicksilver Mining Co.....	381
Pressed Steel Car Co.....	299	Quigley Furniture Co.....	264
Preston, E. B	380	Quincy Mining Co.....	381
Price, Bruce	261	Quinnipiac Brewing Co	354
Price, Charles W	274	Radovich, Bozo	353
Price, H. J	318	Raffensparger, Lizzie J.....	338
Price, W. J	330	Railroad and warehouse commis-	
Price, W. S	341	sion:	
Pridgeon, D. E.....	380	Illinois	299
Prince, Mrs. M. F.....	396	Minnesota	299
Princeton University	380	Missouri	299
Princetonian	239	Railroad Association, The Western	299
Prisch, D. L	338	Railroad, Chattanooga and Look-	
Prison and Child-Saving Institution	421	out Mountain	299
Prison commission, Massachusetts	420	Railroad, Chicago, Milwaukee and	
Proctor, A. Phimister.....	251, 260	St. Paul.....	299
Proctor & Gamble Co.....	412, 414	Railroad commission:	
Professional Photographer Pub-		Alabama.....	299
lishing Co	274	Arkansas.....	299
Proffit, D. R	338	Florida	299
Progressive Age	274	Georgia.....	299
Providence Gold Mining Co.....	380	Kentucky.....	299
Prudential Life Insurance Co.....	414	Massachusetts	299
Public instruction:		Mississippi.....	299
Colorado department	237, 238	New Hampshire.....	299
Illinois department	237	Texas	299
Indiana department	237	Vermont.....	299
Iowa department.....	237	Virginia	299
Maryland department	237	Railroad commissioner:	
Montana department	237	Rhode Island	299
Nebraska department.....	237	Michigan	300
New York department.....	237, 238	North Dakota	300
North Carolina department ..	237	Railroad commissioners:	
Pennsylvania department....	237	California board.....	299
South Dakota department....	237	Connecticut	299
Wisconsin department.....	237	Iowa	299
Public School Journal, Illinois ...	237	Kansas	299
Publishers' Weekly.....	274	Maine	299
Pulaski Iron Co	380	New York	299
Pullen, A	338	South Carolina	299
Pullman Co	299	South Dakota	299
Purington Paving Brick Co.....	381	Wisconsin	299

	Page.		Page.
Railroad Company, Lehigh Valley	299	Rainbow Mining Co	381
Railroad, Michigan Central	299	Rambler Factory (American Bicycle Co)	296
Railroad, Philadelphia and Reading	299	Ranahan, Thomas	338
Railroad Gazette, The	274, 299	Rand Drill Co	283, 293, 381
Railroad, New York Central and Hudson River	299	Rand, McNally & Co	274
Railroad, Northern Pacific	299	Randall, T. A., & Co	274
Railroad Telegraphers	300	Randolph, B. S.	381
Railway Accounting Officers, American Association	300	Rangel, Robert	381
Railway Age	300, 410	Ranger, Henry W.	251
Railway and Engineering Review	300	Rankin, J.	338
Railway Association, The American	300	Ranlett, Captain	381
Railway, Boston and Maine	300	Ranons, Mrs. L. P.	318
Railway Car Accountants, International Association	300	Ransom, Perry	286
Railway, Chicago and Western Michigan	300	Rantoul	261
Railway Club:		Ratcliff, J. T.	318
Central, Buffalo	300	Ratcliff, W. S.	318
New England	300	Raton Coal and Coke Co.	381
New York	300	Ray, G. D.	338
Northwest	300	Ray, J. S.	338
St. Louis	300	Ray, Andrews & Co	318
Western	300	Ray, R. F.	339
Railway Company, Colorado Midland	300	Ray, R. H.	339
Railway Company, Gulf, Colorado and Santa Fe	300	Raycraft, E.	381
Railway Company, Metropolitan of Chicago	300	Raymond Granite Co.	381
Railway Company, Missouri Pacific	300	Raymond, H. R.	339
Railway Company, Peoria and Eastern	300	Raymond, M.	381
Railway General Passenger and Ticket Agents, American Association	300	Raymond & Ely	381
Railway Master Car Builders' Association	300	Reading Factory (American Bicycle Co)	296
Railway Master Car and Locomotive Painters' Association	300	Reading Iron Co	300
Railway Master Mechanics	300	Reardon, George W.	381
Railway Review, The	274	Record, J. H.	318
Railway Road Masters' Association, New England	300	Redding, W. E.	274
Railway Signaling Club	300	Redfield, Edward W.	251
Railway Superintendents of Bridges and Buildings Association	300	Rediger, C.	318
Railway Telegraph Superintendents' Association	300	Redmond, Edmond	303
Railways, Pennsylvania Bureau	300	Redondo Salt Works	352
		Red Umbrella Mining Co	381
		Redway, J. W.	381
		Reece, E. F., & Co	286
		Reed, A. J.	381
		Reed, C.	381
		Reed, C. F.	381
		Reed, D. A.	293
		Reed, F. E., Co	286
		Reed, Geneva	396
		Reed, Homer	339
		Reed, H. W.	381
		Reeder, E.	318
		Reeves, C. P.	381
		Reeves, Elmer	339
		Reeves, H. O.	318

	Page.		Page.
Reeves Pulley Co.....	283	Rice, C. S. O.....	330
Rehn, F. K. M.....	251	Rice Gear Co.....	283, 286
Reichard, R.....	318	Rich, A.....	339
Reichenbach, L. C.....	318	Richards & Roberts.....	351
Reid, A. H.....	306	Richards, F. T.....	251
Reid, I. H.....	381	Richards, John T.....	330
Reid, Robert.....	251, 392	Richards, T.....	381
Reid Brothers.....	262	Richardson, C. F., & Son.....	286
Reid Manufacturing Co.....	282	Richardson, J. C.....	330
Reiger, Paul & Co.....	403	Richardson, J. M.....	381
Reigle, Philip A.....	330	Richardson Silk Co.....	400
Reims, Thomas C., & Co.....	381	Richardson, Thomas V.....	318
Reindahl, Knute.....	280	Richardson, Washington.....	330
Reinert Publishing Co.....	274	Richardson, William D.....	352
Reinhart, C. S.....	251	Richardson & Co.....	318
Reinhold, H., & Co.....	381	Richens, John M.....	303
Reinnagel, G. H.....	274	Rich Hill Coal and Mining Co....	381
Reith, J., jr.....	318	Rich, H. S., & Co.....	275
Reliable Incubator and Brooder Co.....	306	Richmond, John F.....	318
Reliance Lamp Electric Co.....	289	Richmond, O.....	318
Remington, F.....	406	Richmond Consolidated Mining Co.....	381
Remington-Sholes Co.....	264	Richmond Horticultural Society..	339
Remington Standard Typewriter..	410	Richmond Mining Co.....	382
Rend, W. P., & Co.....	381	Richmond Mining and Milling Co.....	382
Rene, W. T.....	318	Richter Manufacturing Co.....	393
Renk, W. F.....	318	Rickard, E. T.....	318
Repsold, A., & Co.....	353	Rickard, Forbes.....	382
Republic Iron and Steel Co.....	381	Ricker, George A.....	300
Republic Mining and Manufactur- ing Co.....	381	Ricketts, C. Lindsay.....	275
Republic Mining Co.....	381	Ridduck, N. E.....	330
Resh, S.....	318	Ridenor & Jenks.....	275
Restein, Clement & Co.....	282	Rider-Ericsson Engine Co.....	282
Retail Druggist.....	274	Rider, Frank.....	339
Revell, Alexander H., & Co.....	393	Rider, P. S.....	382
Review and Herald Publishing Co.....	274, 410	Rider, S. A., Jewelry Co.....	405
Review of Reviews Co.....	274	Ridgway Burton Co.....	382
Review Publishing and Printing Co..	274	Ridgway Mining Co.....	382
Revillon Freres.....	401	Ridley, Chris.....	303
Reynolds, E.....	318	Right, L. W.....	330
Reynolds, Virginia.....	251	Rigsbee, Atlas M.....	330
Rheinstrom, Bettman, Johnson & Co.....	354	Riker Electric Vehicle Co.....	296
Rhind, Duncan.....	339	Riley Brothers.....	410
Rhode Island Granite Works.....	381	Rine, J. M.....	318
Rhode Island Graphite Co.....	381	Rinehart, F. A.....	266
Rhodes, A. S.....	330	Ritchie, E. S., & Sons.....	423
Rhodes, E. & D.....	381	Rittenhouse, N. M.....	382
Rhodes, M. G.....	381	Ritter Dental Manufacturing Co..	279
Rhodes, Bradford & Co.....	275	Riverside Iron Works.....	382
Rhopeter, George.....	381	Riverside Orange Co.....	339
		Roach, James.....	382
		Roach, Thomas.....	382

	Page.		Page.
Roach, William, Manufacturing Co.	289	Rogers, G. W.	319
Road Masters' Association of America	300	Rogers, J. M.	286
Roatcap, Mrs. B. A.	319	Rogers, Mrs. L. S.	382
Roatcap, D. S.	319	Rogers, O. T.	382
Robbins, D. E.	319	Rogers, W. A.	251
Robe, J. W.	330	Rogers, W. H.	348
Roberson, F. H.	339	Rogers & Mason	275
Roberts, A. V.	330	Rogers Mining Co.	382
Roberts & Co.	402	Rohilly, P. H.	319
Roberts, J.	319	Rohwer, George	382
Roberts, J. W.	330	Rolf, A. A.	303
Roberts, I. P.	319	Rollins, C. E.	275
Roberts, P. Z.	382	Rolshoven, Julius	251
Roberts, W. M.	339	Rolty Co.	330
Robertson, J. T.	319	Romer Mining Co.	382
Robertson, T. J., & Son	330	Romona Oolitic Stone Co.	382
Robineau, A. A.	396	Rondebust, J. H.	260
Robins Conveying Belt Co.	282, 283	Rookwood Pottery Co.	396, 410
Robinson, A.	330, 382	Roosevelt Hospital	420
Robinson, Alexander McK.	319	Root, A. I., Co.	275, 332
Robinson, A. S.	319	Root & Cain	319
Robinson, C. A.	319, 330	Roots, P. H. & F. M., Co.	283
Robinson, J.	319	Rorick Air Cushion Truss Co.	279
Robinson, Theodore	251	Rosback, Fred P.	275
Robinson, Will S.	251	Roschi, J.	339
Robinson Mining Co.	382	Rosenberg Brothers	330
Robison, Mrs. Thomas R.	339	Rosenheimer, John	382
Robnett, D. A.	339	Rosenthal, J.	382
Roby, C. C.	330	Rose Orphans' Home	420
Rochester and Pittsburg Coal and Iron Co.	382	Rosiclaire Mining Co.	382
Rochester Radiator Co.	398	Ross, J. A.	339
Rockhill Iron and Coal Co.	382	Ross, J. R.	319
Rocklind Quarry Co.	382	Rothenschuch, F.	396
Rockport Granite Co.	382	Rough Notes Co.	275
Rockwell & Rupel	393	Rousch, O. S.	339
Rocky River Brownstone Co.	382	Rouse, Harry B.	264
Rocky Ford Coal Co.	382	Rowe, Frank	319
Rocky Point Granite Works	382	Rowell, George P., & Co.	275
Rodd, Thomas	300	Rowell, Mrs. Fanny	396
Rodenburg, Charles	339	Rowland Multiplex Printing Tele- graph Co.	291
Roderick, G.	319	Rowland, Henry A.	239, 278
Rodkinson, Michael L.	275	Royal Arcanum	414
Roebeling's, John A., Sons Co.	291, 295, 390, 391	Rubber Tire Wheel Co., of Amer- ica	296
Roeder, Henry	382	Ruckel, A. D., & Son	382
Roelker, H. B.	422	Runyon, E. W.	351
Roelofs, Henry H., & Co.	401	Ruppe, A.	319
Roger Williams University	241	Russell Cream Co.	323
Rogers, Miss Alla	339	Russell, D. B.	319
Rogers, Brown & Co.	382, 390	Russell, D. B.	330
Rogers, E.	339	Russell, E. T., & Co.	351
		Russell, Elmira	339

	Page.		Page.
Russell, G	382	Sanders, D. H.	330
Russell Mining Co.	382	Sanders, L.	330
Russia Cement Co.	402	Sanders, T. H., Publishing Co.	275
Rutgers College	239	Sanders, Orr & Co.	330
Rutherford, Joseph.	339	Sanderson, F.	383
Rutland Railroad Co.	410	Sanford, Albert B.	383
Ryan & Richardson.	339	Sanitarium:	
Ryan, P. J., D. D.	275	Colorado.	418
St. Anthony Mining and Milling Co	382	Gabriels	418
St. Bernard Coal Co.	293, 382	Loomis	418
St. Charles Condensing Co.	324	Sharon	418
St. Francis Industrial School	420	Sanitas Nut Food Co.	349
St. Gaudens, Augustus.	260	Santa Ana Chamber of Commerce.	351
St. German, N. C.	319	Santa Barbara Mineral Water Co.	418
St. Hubert Wine Co.	353	Santa Cruz Island Co.	330
St. Joe Lead Co., St. Louis, Mo.	382	Sargent, John S.	251-252
St. Joe Lead Co., Bonnetterre, Mo.	382	Saunders, W. L.	275
St. Lawrence Marble Co.	384	Sauser, Andre.	383
St. Louis Dairy Co.	306, 324	Savage Arms Co.	346
St. Louis Well Machine and Tool Co	382	Savage, J. M.	303
St. Luke's Hospital.	420	Saw Company.	286
St. Vincent de Paul Hospital.	420	Sawyer, J. J.	319
Sackman, F. A.	286	Sawyer Tool Co.	286
Sacramento River Packing Co.	351	Sax, Sara	396
Saegertown Mineral Springs Co.	354	Saxon, John G.	252
Safety Emery Wheel Co.	286	Scaife, William B., & Sons.	398
Safety Insulated Wire and Cable Co	291	Scarborough, J. K.	319
Sagamore Coal Co.	382	Scientific Publishing Co.	383
Salem Tanning Co.	403	Scotch Oats Mill.	349
Salisbury Mining and Milling Co	382	Scott Brothers.	383
Salisbury, Lydia A.	319	Scott, Charles	330
Salmon River Mining Co.	382	Scott, E. H., Mrs.	252
Salt Lake City Onyx Co.	382	Scott, J.	319
Salt Lake Coal Co.	383	Scott, J. W.	330
Salzer, J. A., Seed Co.	319	Scott, Lee R.	330
San Benito Mining Co.	383	Scott, Richard.	330
San Diego Marble Co.	383	Scott & Magner.	319
San Fernando Co.	383	Scranton, Jewett	383
San Francisco Breweries	354	Scripture, Edward W.	278
San Francisco Packing Co.	352	Schudder, Janet	260
San Francisco Slate Co.	383	Schaffer & Budenberg	282, 283
San Francisco Street Improvement Co	383	Scheer, Frank.	319
San Francisco and San Joaquin Coal Co.	383	Scherer, Oscar, & Bro.	403
San Gabriel Fruit Co.	351	Schieren, Charles A., & Co.	283, 410
San Juan Star Mining Co.	383	Schiermier, W.	319
San Luis Vineyard.	353	Schilling, C., & Co.	353
Sandberg, F. W.	405, 406	Schindel, S. M.	319
		Schladitz, E.	257
		Schlesinger, Ferdinand	383
		Schmidt, Charles.	396
		Schmidt, Gustav	399
		Schmidt, W.	363
		Schnabel, D. M.	383

	Page.		Page.
Schneider Granite Co.....	383	Shasta Mining Co.....	383
Schneider, Louis	383	Shaw, C. C., & Son	330
Schoenhofen Brewing Co	355	Shaw, E. L.....	319
Schofield, J. Elmer.....	252	Shaw Electric Crane Co.....	288
Scholl, Elias	339	Shaw, Fred	339
School Bulletin	237	Sheague, G. A	275
School for Feeble-Minded.....	420	Shearer, F. E	383
School for Feeble-Minded, Fort Wayne	420	Sheffield Car Co.....	410
School Journal	237, 238	Shelby Factory American Bicycle Co	296
School of Mines	383	Sheldon, C. H.....	319
School Review	238	Sheldon, J. D	330
School and Home Education	237	Shelley, G. E	319
Schram, Jacob	353	Shelton Co.....	391
Schreiber, W. A. H.....	383	Shelton, D. A	319
Schreyvogel, Charles.....	252	Shepard	262
Schriber, H. F	319	Shepard, James H.....	319
Schumacher, F. G.....	266	Shepley, Rutan & Coolidge.....	262
Schuritzer & Boyer.....	383	Shepperson, Daniel W	319
Schuttler & Hotz	319	Sherfy, C. W.....	319
Schwartzburger, C.....	257	Sheriff Mining Co	383
Schweinfurt, A. C	262	Sherman, W. A	383
Schweyer & Liess	383	Sherron, Charles B	275
Scripture, Edw. W	278, 300	Sherwin-Williams Co	413
Sea Beach Pickling Works	351	Sherwood Manufacturing Co	282
Seabury & Johnson.....	279, 402	Sherwood, Rosina Emmet.....	252
Seafert, William.....	275	Shields, Emily	339, 352
Seager, A. L	383	Shine, John W.....	330
Sears, Sarah C.....	252	Shipman, W. A	330
Seaton Mining and Milling Co....	383	Shiras, George, 3d.....	347
Seattle Brewing and Malting Co..	355	Shirayamadani, Kataro	396
Seaver Brothers	319	Shirley, A	339
Seawanhaka Corinthian Yacht Club	303	Shockley, W. H.....	383
Sebastian, W. W	330	Shoe and Leather Reporter	275, 410
Sebewaing Coal Co	383	Shoe Trade Journal.....	275
Sedgwick, Richard	339	Shoemaker, P. H.....	319
Sehon, A. D	396	Shofner, L. M.....	319
Seitz, J	319	Short Story Publishing Co	275
Sellers, William, & Co.....	282, 300, 422	Shouse, S. H.....	319
Sellwood, Joseph.....	383	Showalter, S. J.....	319
Semon, Adolph.....	383	Shriver, T., & Co.....	280
Sempire Clock Co.....	292	Shwatts, W.....	319
Sen Sen Co.....	352, 402, 403	Sibley, Gideon	279
Sessions, Mrs. F. M	396	Sibley, R. C.....	330
Sessen, G. L	339	Sibley Journal of Engineering....	275
Seville Packing Co	319	Siegel, Cooper & Co	413
Shaeffer, W. E	339	Sierra Buttes Gold Mining Co....	383
Shahan, I. T	319	Sierra Madre Vintage Co.....	353
Sharadui, H. W	396	Signal Oil Co.....	300
Sharp, J. H	252	Siljan, C. H.....	319
Sharpless, P. M	306	Sills, W. H., Mica Co.....	383
Sharwood, W	383	Silverberg, J	319
		Silver Bow Mining Co	383

	Page.		Page.
Silver, Burdett & Co.....	237,	Smith, E., & Son	339
	238, 239, 240	Smith, Eugene	348
Silver Dick Mining Co	383	Smith, F.	320
Silver King Mining Co.....	383	Smith, Fred. D.....	339
Silver Lowry	383	Smith, George A	320
Silverthorn, G. W.....	383	Smith, George B	304
Simmes, S. S.....	330	Smith, George T	331
Simmons, Harry E.....	396	Smith, George W.....	339
Simmons, John, Co.....	278, 397	Smith Granite Co	384
Simmons, William E	330	Smith, Harlan J.....	239
Simonds Manufacturing Co.....	286	Smith, H. B., Machine Co	286
Simons, Amory C	260	Smith, H. C	320
Simpson, Edward	383	Smith, Hugh M	348
Simpson, J. B.....	319	Smith, J. C	348
Simpson, J. B., and Gibbs, B	320	Smith, Jacob E	339
Simpson, J. E.....	320	Smith, James F	339
Simpson, McIntyre & Co.....	324	Smith, John E	331
Sims Coal Co.....	383	Smith, Julius P.....	320
Sinclair, W. A	303	Smith, Julius Paul	353
Singer Manufacturing Co.....	275,	Smith, J. O	320
	394, 399, 410	Smith, O	320
Singleton, W. L.....	330	Smith, O. W	320
Sinnamahoning Gold and Copper		Smith Parts Factory, American	
Co	384	Bicycle Co	297
Skinner Chuck Co.....	286	Smith-Premier Typewriter Co.....	264
Skinner, Frank W.....	410	Smith, R. H., Manufacturing Co. 265,	405
Slade, C. C.....	320	Smith, S. A	320
Slade & Hicks	264	Smith, S. Morgan, Co.....	282
Slater, W. A	330	Smith, W. D	320
Slatington Slate Co	384	Smith, W. Q	339
Slaton, J. P., & J. C.....	330	Smith, W. T	384
Slaymaker, A. W.....	339	Smith, W. T., & Co.....	339
Sloan, J. B., & Co	331	Smith & Anthony	398
Sloan Maternity Hospital	420	Smith & Fullerton.....	331
Sloan, R. E.....	384	Smith & Kaufman.....	400
Sloan, W. & J.....	393	Smith & McNicol.....	384
Slocomb, F. F., & Co	403	Smith & Wesson	346
Slocomb, J. T., & Co	286	Snell, Henry B.....	252
Sloss Furnace	384	Snow, Clark	331
Sloss Iron and Steel Co	384	Snowden, F.....	320
Small, Maynard & Co.....	275, 418	Society, Beck Literary.....	238
Smalley, E. V.....	275	Solar Refining Co	402
Smedley, William S	252	Sommerkamp, R. P	320, 331
Smoothon Manufacturing Co	282	Soniat, L. M	352
Smuggler Union Mining Co	384	Sonne, Otto	295
Smurthwaite, A. A., Produce Co..	320	Sorenson, Andrew J	280
Smith, Alfred.....	331	Sormano, G	353
Smith, A. L.....	384	Soulé Commercial College and Lit-	
Smith, A. T.....	320	erary Institute	241
Smith Brothers.....	320	South Eureka Mining Co.....	384
Smith, B., & W. B	393	South Side Mining and Manufac-	
Smith, Chandler	384	turing Co	384
Smith, Charles D.....	331	South Spring Mining Co	384

	Page.		Page.
South Swansea Mining Co	384	Standard Caster and Wheel Co ...	391
Southern California Salt Co	352	Standard Coal and Coke Co	384
Southern California Wine Co.....	353	Standard Electric Co.....	295
Southern Cotton Oil Co	320	Standard Furniture Co.....	393
Southern Lumber Manufacturers'		Standard Manufacturing Co ...	393, 418
Association	345	Standard Oil Co	384, 402
Southern Mining Co	384	Standard Paint Co	288, 293
Southern Pacific Railroad	413	Standard Pneumatic Tool Co	287
Southern Railway Co	320,	Standard Sewing Machine Co ...	399
331, 341, 384, 410, 411		Standard Steel Works.....	300
Southwest Virginia Improvement		Standard Telephone and Electric	
Co.....	384	Co.....	291
Southwestern Coal and Improve-		Standard Tool Co.....	287
ment Co	384	Standard Varnish Works.....	410
Soverhill, S. G	320, 339	Standard Worsted Co	399
Spadden, J. M	339	Stanley Consolidated Mining Co ..	384
Spalding, A. G., & Bros.....	407	Stanley Rule and Level Co.....	391
Spalding Manufacturing Co.....	407	Stanley, William E.....	304
Spalding St. Lawrence Boat Co ...	304	Stanley Works	391
Sparkman, John H	331	Stanstead Granite Quarries.....	384
Specie Payment Mining Co.....	384	Staples, L. O	320
Speckles, J. C	331	Starchroom Publishing Co	275, 410
Speer Carbon Co	288, 290	Star Consolidated Mining Co	384
Stejneger, Leonhard	348	Star Milk Cooler Co	306
Spencer, E. E	320	Stark & Ralston	384
Spencer, George W	331, 339	Starrett, The L. S., Co.....	287
Spencer Optical Co	278, 397	State Board of Health, Massachu-	
Spencer, T. C	331	setts	295
Spencerian Commercial School ...	241	State Banking Department	414
Spenker, James F.....	320	State Charities Aid Association ...	421
Sperry Flour Co.....	349	State, Charles	257
Spice Mill.....	410	State Commissioner of Banks,	
Spicer-Simson, Margaret	252	Pennsylvania	414
Spicer, W. E	331	State Ore Sampling Co.....	384
Spiller & Robinson	404	State Public School, Michigan....	419
Spore, Z. S.....	320	Stearns, John N. & Co.....	400
Sprague, Amelia B	396	Stebbins, Charles M	304
Sprague Electric Co.....	288, 291	Steckel, George	266
Sprague, H	320	Steel Cable Engineering Co	293
Spratt's Patent	320	Steel, T.....	384
Sprawls, W. L	320	Steele, Theodore C	252
Spreckles Sugar Co	352	Steele, W. F	421
Springfield Machine Tool Co ...	286, 399	Steffen, A.....	320
Springfield Manufacturing Co	287	Stein, William	331
Sprunt, Alexander, & Son.....	331	Stein & Boericke	384, 391
Squier, E. E., & Co.....	384	Steinhart, Brothers & Co.....	354
Staddon, Samuel	384	Steinie, Carrie	396
Stager, Henry J	275	Steinmeyer, W. & Co	410
Staib-Abendschein Co	280	Stephen, W. F	320
Stallings, J. R.....	331	Stephens, Alice Barber	252
Standard Asphalt Co.....	384	Stephens, E. F	
Standard Asphaltum Co.....	384	Stephens, T.....	320

	Page.		Page.
Sterling Coal and Coke Co	384	Stow, H. P.....	385
Sterling Factory, American Bicycle Co	297	Stow Manufacturing Co	283, 288
Stern, Daniel.....	275	Stowe, H	385
Stern, Pohly & Herman	400	Strafer, Harriette R.....	253
Sterner, Albert E.....	252	Straub, John.....	339
Stern's School of Languages.....	237	Strauch Brothers	280
Stetson, John B., Co.....	401	Strauss, L. L	404
Steubenville Coal and Mining Co ..	384	Street & Smith	275
Stevens, B. H	384	Street Cleaning Department, New York	418
Stevens, C. C.....	331	Street Department, Boston.....	418
Stevens Coal Co	384	Street Railway Publishing Co....	275, 300
Stevens, H.....	384	Street Railway Association, Amer- ican	300
Stevens Institute of Technology ..	239, 304	Strom, H. H	320
Stevenson, C. H.....	348	Stromberg-Carlson Telephone Manufacturing Co	291
Stevenson, T. R. & Co	392, 398	Strong, Henry R	275
Steward, D. M., Manufacturing Co ..	288	Strong, Mrs. H. W. R	339
Stewart Hartshorn Co	394	Stuart, J. A	320
Stewart, Jules.....	252	Stuart Pecan Co.....	339
Stewart, Mrs. Henry P	396	Stuarts Foundry and Machine Works	283
Stewart, Mrs. L. F.....	396	Stuckey, J. L.....	320
Stewart, P. M.....	320	Studebaker Brothers Manufactur- ing Co	410
Stewart, S. N.....	304	Studer, Jacob H.....	275
Stiele, Mrs. Frederick.....	396	Studer, Nicholas.....	340
Stiggers, E. G	275	Stump, S. C.....	385
Stiles & Parker Press Co	287	Sturtevant, B. F., & Co.....	283
Stillwell-Bierce & Smith-Vaile Co ..	283	Stuyvesant, Rutherford	331
Stine, Fred.....	320	Sublette, William.....	385
Stirling-Firth Co	390	Sugar beet	410
Stitzel Brothers	354	Sullivan, J. E	320
Stock, W. H	320	Sullivan, Joseph W.....	331
Stockbridge Soapstone Works	384	Sullivan, L. E	331
Stockwell, H. E.....	384	Sullivan, William.....	385
Stogner, John.....	331	Sultemeyer, C. F	304
Stoiber, Edward G., & Co.....	385	Summit Mining Co	385
Stoiber, G. H	385	Sun Dance Mining Co.....	385
Stokes, W. H.....	320	Sunset Mining Co., California	385
Stone	410	Sunset Mining Co., Missouri.....	385
Stone, George A	339	Sunshine Mining Co	385
Stone, Herbert S., & Co.....	275	Superior China Clay Co.....	385
Stone, James A., & Son.....	331	Surbrug & Co	404
Stone Mill	349	Surveyors and Civil Engineers, Ohio Society	300
Stone, Nota B.....	331	Sussfeld, Lorsch & Co.....	287
Stone, R. J.....	331	Sutherland, W. J.....	385
Stone, W. B.....	385	Sutter Brothers.....	404
Stony Creek Red Granite Co	385	Sutton, George	320
Storck, George H.....	406	Swain, W	385
Storer, Mrs. Marie L.....	396, 406		
Storms, W. H	385		
Story, Julian.....	253		
Stouffer, J	320		
Stover Manufacturing Co.....	305, 391		

	Page.		Page.
Swanders, E. H	320	Taylor, N. H	321
Swedish Methodist Episcopal Book Concern	275	Taylor, P. H	321
Sweet, W. H	385	Taylor, R. B	385
Sweetwater Coal Co	385	Taylor, Robert	339
Swift, Caroline	396	Taylor, S. S	405
Swift & Co	324, 349, 351, 402	Taylor, W. H	304
Sykes, C. P	385	Teachers' College	240
Sylvester, H	385	Teasdel, Mary	253
Syracuse Chilled Plow Co	305	Tegt, E	321
Syracuse Electrical Instrument Co ..	290	Tehachapi Building and Stone Co ..	385
Syracuse Factory, American Bicycle Co	297	Teich, Frank	385
T. & B. Tool Co	287	Telephone Magazine	276, 410
Taber, E. M	253	Telephone Manufacturing Co	291
Tabor Manufacturing Co	284	Temescal Mining Co	385
Tabor Photographic Co	266	Temple, E. S	385
Tabor, R. H	339	Templeton, W. E	321
Taft, Austin S	320	Tenement house committee, Asso- ciated Charities	412
Taft, F. L. B	339	Tennessee Coal and Iron R. R. Co ..	385
Taft, Joseph H	392, 393, 394, 400	Tennessee Producers' Marble Co ..	385
Taft & Dunn	385	Tenney, J. F., Co	265, 405
Taggart & Hall	385	Tenney, S. A	321
Tailor, The	410	Tenny, Delos	339
Talant, A. W	321	Terhune, W. L	276
Talant, F. H	321	Texas Briquette and Coal Co	385
Tallman, H. B	321	Texas Consolidated Mining Co	385
Taltavall, John B	276	Texas Farm and Ranch	410
Tamale I. X. L. Co	351	Texas Mining Co	385
Tamarack Mining Co	390	Texas Tobacco Growers' Associa- tion	404
Tams, Lemoine & Crane	304	Texas and Pacific Coal Co	385
Tanner, H. O	253	Textile Publishing Co	276, 410
Tanner, Z. L	348	Thacher, Edwin	295
Tarbell, Edmund C	253	Thacker Coal and Coke Co	385
Tarkington, S. G	331	Thackray, George E	293
Taskinas Mineral Springs Co	418	Thatcher, H. L	304
Taubman, Ed	339	Thayer, Abbott	253
Taunton Locomotive Manufactur- ing Co	282, 300	Thayer, Theodora W	253
Tax commissioner, Maryland	300	Theriat, Charles J	253
Tax commissioners, Indiana board ..	301	Thibodran, Emlyde	304
Taylor, A. (Missouri)	321	Thies, J	385
Taylor, A. (Kansas)	321	Thirkeld, Rev. L. A	276
Taylor, B. L. L	331	Thiry, J. H	238
Taylor, C. J	253	Thomas, John P., & Co	297
Taylor, E. Coxhead, Mrs	400	Thomas, M. Carey	240
Taylor, Emily D	253	Thomas, R., & Sons Co	288
Taylor Iron and Steel Co. (New York)	390, 391	Thomas, Ross	339
Taylor Iron and Steel Co. (New Jersey)	390	Thomas, Samuel	321
Taylor, Hughey	339	Thomas, S. Seymour	253
Taylor, Mary A	396	Thomas, William C	331
		Thompson	262
		Thompson, Edward D	304
		Thompson Mining Co	385

	Page.		Page.
Thompson Parts Factory, American		Trades Weekly Co.....	276
Bicycle Co.....	297	Trade Union Journals.....	414
Thompson Publishing Co.....	276	Training School for Teachers, New	
Thompson Reporting Co.....	410	York.....	237
Thompson Run Coal Co.....	385	Transportation, Nebraska Board...	301
Thompson, S. M.....	331	Trautvetter Brothers.....	284
Thompson, Z. T.....	331	Traupell, Eugene.....	386
Thomsen Chemical Co.....	402	Traylor, T. W.....	331
Thomson Meter Co.....	284	Treasury Department.....	411
Thorburn, John M., & Co.....	321	Treedley, J. K., & Sons.....	386
Thorp, H. T.....	385	Tregarden Brothers.....	386
Thorp & Son.....	385	Trenton Iron Co.....	293
Thorpe, Pratt & Co.....	282	Trenton Potteries Co.....	396
Thrasher, A. J.....	352	Trent Tile Co.....	396
Thresher Electric Co.....	288	Tribune Factory, American Bicycle	
Tibbe, H., & Son.....	406	Co.....	297
Tiffany & Co.. 265, 346, 348, 385, 405, 406		Trigg, William R., & Co.....	410
Tiffany Glass and Decorating Co... 290,		Trimble, MaGill & Co.....	339
392, 394, 396, 397, 398, 406		Trimont Manufacturing Co.....	287
Tiffany, Louis.....	392	Tripler Liquid Air Power Co... 284, 402	
Tiger Mining and Milling Co.....	385	Tripp, Louis F.....	331
Tilden, Douglas.....	200	Tripp, William P.....	331
Tillman, E. D.....	331	Triumph Electric Co.....	289
Timber Line Mining Co.....	385	Triumph Ice Machine Co.....	410
Tin and Terne and Metal World..	410	Troop, William.....	386
Tinkey, John.....	257	Troutman, John H.....	340
Tinsley, C. D.....	386	Trowbridge, D. S.....	351
Titcomb, John W.....	348	Troy Female Seminary.....	238
Tobacco Leaf Publishing Co.....	410	Troy Laundry Machinery Co.....	398
Toberentz, R.....	406	Troy Nickel Works.....	398
Todd, Albert M.....	331	True Blue Marble Co.....	386
Todd, W. E.....	304	True, F. W.....	348
Toerring, C. J., Co.....	290	Trumbull & Beebe..... 321, 340	
To-Kalon Wine Co.....	353	Trump Brothers Machine Co.....	287
Toledo Factory, American Bicycle		Trump, W.....	321
Co.....	297	Tuck, J. H. L.....	386
Tolman, W. H..... 413, 416		Tucker, E. F.....	321
Tomboy Gold Mines Co.....	386	Tucker, F. de L.....	416
Tompkins, D. A.....	331	Tungsten Mining Co.....	386
Tompkins, Josiah, & Son.....	331	Tunison, Mary L.....	304
Toohy, Sallie.....	396	Turner Brick Co.....	386
Topping, Helen M.....	396	Turner Coal, Coke and Mining	
Torrens Land System.....	410	Co.....	386
Torrey, H. S.....	284	Turner, G. W.....	321
Torrey, Curtis & Tyrell.....	401	Turner, William S.....	331
Towle Syrup Co.....	352	Turris, John W., & Co.....	331
Town Topics Publishing Co.....	276	Tuskegee Normal and Industrial	
Towson, W. P.....	321	Institute..... 241, 416	
Track Elevation and Depression		Tuttle, L. C.....	331
Com.....	301	Tuttle & Bailey Manufacturing Co..	398
Trade Dollar Mining and Milling		Tyler, Charles M.....	386
Co.....	386	Tyler, The W. S., Co..... 284, 391	
Trade Journal.....	276	Tyro Mining Co.....	386

	Page.		Page.
Tyson Mining Co.....	386	University of Atlanta.....	241
Ulster Bluestone Co.....	386	University of California.....	240
Uncle Sam Mining Co.....	386	University of Chicago.....	240, 386
Underwood, John, & Co.....	265	University of Colorado.....	240
Underwood, S. G.....	321	University of Fisk.....	241
Union Bag and Paper Co.....	405	University of Idaho.....	240
Union Copper Co.....	386	University of Pennsylvania.....	240
Union Glee Club, San Francisco..	386	University of Princeton.....	240
Union Gold Mining Co.....	386	University of State of New York..	240, 413
Union Iron Works.....	386	University of State of New York,	
Union Lead Co.....	386	Museum Department.....	240
Union Manufacturing Co.....	287	University of Wisconsin.....	240, 276
Union Oil Co., New Orleans.....	321	University of Wyoming.....	386
Union Oil Co., San Francisco.....	386	Updike, N. B.....	386
Union Pacific Co.....	386	Upholsterer, The.....	410
Union Pacific Salt Works.....	352	Urbana Wine Co.....	353
Union Porcelain Works.....	289	Utah Mining Co.....	386
Union Sand Paper Co.....	386	Utica Mining Co.....	386
Union Soapstone Co.....	386	Vacuum Oil Co.....	282, 284, 403
Union Stock Yards Co.....	349	Vaden, J. H.....	321
Union Sulphur Co.....	386	Vail, Eugene.....	253
Union Twin Edge Setter Co.....	399	Valentien, Anna M.....	396
United American Mechanics.....	414	Valentien, A. R.....	396
United Ancient Order of Druids..	414	Valentine & Co.....	402
United Electric Heating Co.....	292	Valentine, M. D., & Son Co.....	390
United Globe Mining Co.....	386, 390	Van Briggle, Artus.....	396
United Shoe Machinery Co.....	399	Van Camp Packing Co.....	351
United States Carbon Co.....	290	Van Cauenberg, Frank.....	304
United States census.....	410	Vanderbeck Tool Works.....	287
United States Census Bureau.....	414	Vanderbilt, Chas.....	340
United States Commission of Fish		Vanderbilt Clinique.....	420
and Fisheries.....	348	Van Houten, J.....	386
United States Express Co.....	295	Van Nostrand, D., & Co.....	386
United States Frumentum Co....	349	Van Oost, John W.....	276
United States Government Print-		Van Shuler, Duane.....	340
ing Office.....	265	Van Slyke, A.....	321
United States Industrial Publish-		Van Valkenburg, J. D.....	331
ing Co.....	276	Van Wagoner & Williams Hard-	
United States League of Loan Build-		ware Co.....	289
ing and Loan Associations.....	412	Van Wye, G. P.....	304
United States Marble Co.....	386	Vartray Water Co.....	355
United States Metallic Packing		Vassar College.....	240
Co.....	282, 301	Vaughn, Henry.....	262
United States Mining Co.....	386	Vaughn Machine Co.....	403
United States Playing Card Co..	405, 407	Vedder, Simon H.....	253
United States Tobacco Co.....	404	Veeder Manufacturing Co.....	297
United States Trade Mark Associa-		Vegetarian Co.....	276
tion.....	276	Veitor, E. K., & Co.....	404
Unitype Co.....	265	Velasco School of Languages.....	238
Universal Company.....	386	Venable, A. R.....	321
Universal Machine Co.....	287	Verbeck, George J.....	265
Universal Peace Union.....	276	Verd-Antique Marble Co.....	386
Universal Silver Polish Co.....	402	Verdenal, D. F.....	386

	Page.		Page.
Vermont Condensed Milk Co	324	Walden, W. A	321
Vermont Farm Machine Co	306	Waldron, C. A	321
Vermont Marble Co	386, 410	Walker-Gordon Laboratory Co ...	324
Viaduct Manufacturing Co	291	Walker, Horatio	254
Viau, Lewis	351	Walker, O. S., & Co	287
Vickars, Jas. S	340	Walker, M. F	321
Vickers, Thomas McE	295	Walker, W. P	321
Victor Coal Co	387	Walker, W. S	331
Victor Malt Whiskey Co	354	Walker & Kimball	262
Victor Marble Co	387	Walker & Morris	262
Vilas Mining Co	387	Walker & Pratt Manufacturing Co	412
Vina Vineyard and Distilling Co .	353	Wall, A. Bryan	254
Vincenheller, W. G	340	Wallihan, A. G	347
Vine, Emory	321	Wallis, Frank E	392
Vinton, Frederick P	253	Walls, Sam	331
Virginia Coal and Coke Co	387	Wallpaper News	410
Virginia-Carolina Chemical Co ...	305	Walsh, Thomas F	387
Virginia Horticultural Society	340	Walter, Mrs. W. C	396
Vital Statistics, Division, of Michi- gan State Department	418	Walters, J	321
Vitrified Wheel Co	287	Walters, Moses	321
Voice Bros	351	Walton, I. N	321
Voigt, Henry E	276	Walton, J. W	321
Volkmar, Charles	396	Walworth Manufacturing Co ...	282, 284
Von Klenner, Mme. K. E	276	Wamsutta Mills	399
Vonnoh, Bessie Potter	260, 406	Wampum Run Coal Co	387
Vonnoh, Robert W	253-254	Wanamaker, John	413
Voorhees, E. B	321	Ward, E. B	387
Vorce, H	321	Ward, J. A	406
Voris, F. D	340	Ward Leonard Electrical Co	289
Vosbrink, George P	321	Ward Pyritic Smelting Co	390
Vought, M. I	290	Ward, William	340
Voy, C. D	387	Ward, W. S	387
Vulcanized Fiber Co	289	Ward & Capito	387
Vulcanized Fibre Co	387	Warder, Bushnell & Glessner Co ..	305
Wade, Rufus R	398	Ware Brothers	276, 410
Wade, T. B	321	Wareham, J. D	396
Wadley, William O	331	Waring, Mrs. C. E. Scott	400
Waggoner, S. S	331	Warneke, Henry B	340
Wagner, C. M	387	Warner, E. C	340
Wagner Electrical Manufacturing Co	289, 292	Warner, G. E	321
Wagner Leather Co	403	Warner, H. C	321
Wagner Manufacturing Co	398	Warner, William R., & Co	402
Wagner, Martin, Co	351	Warner & Swasey	278, 287
Wagner, Mrs. M. L	396	Warnock Uniform Co	401
Wagner Typewriter Co	265	Warren City Boiler Works	295
Wagner, W. F	304	Warren, E. B	304
Wagner, W	321	Warren, Nathan	414
Waite, W. S	321	Warsaw Blue Stone Co	387
Wake, C. S	240	Warwick, J. M	331
Walcott, George D., & Son	287	Washburn-Crosby Co	349
Walden, Lionel	254	Washburn Shops of the Worcester Polytechnic Institute	287

	Page.		Page.
Washington Agricultural Experiment Station	321	Weller, P	340
Washington, B.	340	Wellesley College	240
Washington, Booker T.	241	Wellington, Frank H.	257
Washington Carbon Co	290	Wellman Seaver Engineering Co ..	390
Washington Junction Stone Co.	387	Wells, A. J., Manufacturing Co ..	393
Washington public schools	416	Wells Bros. & Co.	287
Washington Sanitarium Improvement Co	412	Wells, George A	387
Washington University	238	Wells, Heber C	387
Wasson, B. S., & Co	276	Welsbach Light Co.	387
Watchman Publishing Co.	276	Welsh Packing Co.	282
Waterbury Tool Co.	287	Werner, Edgar S	276
Waterman, L. E., Co	405	Wesel, F., Manufacturing Co.	265
Waterman, Richard, jr.	416	Wessinger, P. J	331
Waterman, W. S	387	West, Andrew Fleming	240
Watertown Brick Co.	387	West Gallatin Irrigation Co	295
Waters, Sadie	254	West, George, & Son	353
Watkins, W. W	331	West, H. S.	290
Watkins, J. F	331	West, Bina M.	276
Watson, D. A	321	West Point Mill Co.	321
Watson, N. A	282	West Virginia Central and Pittsburgh Railway Co	387
Watson-Stillman Co	284, 287	West Virginia Horticultural Society	340
Watts, C. J	331	Westcott Chuck Co.	287
Watts, John M., Sons	282	Westcott Chuck Co.	287
Watts & Heikes	387	Western Bank Note and Engraving Co	265
Watts & Melton	387	Western Coal and Mining Co.	387
Wayman, H. R	340	Western Electric Co	289, 290, 291
Weaner, J. W	331	Western Manufacturing Co.	287
Webb Granite and Construction Co ..	387	Western School Journal	237
Webb, I. A	387	Western Telephone Construction Co	291
Webb, L. T., Mrs	403	Westfield Factory, American Bicycle Co	297
Webb, W. T	331	Westfield Marble and Sandstone Co	387
Webber, F	387	Westinghouse Air Brake Co.	301, 413
Weber Railway Joint Manufacturing Co	301	Westinghouse Co.	410
Webster, Alice, and Pratt, Candace R	276	Westinghouse Electric and Manufacturing Co.	289
Webster County Horticultural Society	340	Westmoreland Coal Co	387
Webster, Warren & Co.	398	Weston Electrical Instrument Co ..	292
Wedge Mining Co	387	Weston Paper Manufacturing Co ..	393, 405, 406
Week, The	421	Weston, S. G	387
Weeks, E. Lord	254	Wetherby, A. G	387
Wehner, William	353	Wetmore-Bowen Co	353
Weidner, Aaron J	340	Wetter, Joseph, & Co.	265
Weidner, Carl A	254	Weyden, Harry Van der	254
Weir, John	387	Whately, Walter	340
Weir, J. Alden	254	Whatley, S. J	321
Weir, John F	254	Wheeler Condenser and Engineering Co	282
Weirick, G. S	321		
Welch Maple Sugar Co.	352		
Welch Grape Juice Co	351		

	Page.		Page.
Wheeler, Candace.....	393	Williamson Bros. Co	422
Wheeler, T. C.	321	Williamson, J. A.	332
Wheeler & Hurlbert.....	387	Williamson, J. J.	332
Wheelwright & Haven.....	262	Williamson, T. S., & Co	404
Whipsaw Mining Co.....	387	Willingham, B. H.	332
Whistler, J. MacNeil	254, 258	Willis, G. F.	388
Whitaker, F. A.	332	Willoughby, W. F.	407, 410, 412, 414
Whitaker, George F.	276	Willy, John	277
White Breast Fuel Co	387	Wilmington Star Mining Co.....	388
White City Art Co	276	Williams, A. E.	322
White, E. M.	322	Williams-Abbott Electric Co	291
White, Frank B., Co	276	Williams & Co	387
White, H. C., Co.....	266	Williams, C. K., & Co	387, 391
White, J. A.	322	Williams, David, Co.....	287, 388
White, James, & Co	276	Williams, Edwin.....	276
White, O. C., Co	290	Williams Electric Co	291
White, Peter.....	387	Williams, E. W.	388
White Rock Mineral Springs Co. 355,	418	Williams, George.....	352
White Sewing Machine Co	399	Williams, Henry	322
Whiteley, John	322	Williams, J. A.	388
Whitesell, J. C.	322	Williams, J. B., Co.....	403
Whiting Paper Co	405	Williams, J. H., & Co	391, 412
Whitman Agricultural Co.....	305	Williams, J. M.	332
Whitman, Clarence, & Co.....	399	Williams, John R.	388
Whitman & Barnes Co.....	305	Williams, P. N.	322
Whitney, Charles	322	Williams, Prescott.....	340
Whitney Motor Co	297	Williams, T. H., & Co	413
Whitney-Noyes Seed Co	322	Williams, Thomas	306
Whitney, Warren	262	Williams, Thomas A	277
Whittemore, William J.....	254	Williams Typewriter Co	265
Wholesale Grocers' and Cannery		Williams, W.	388
Directory	410	Williams, W. B.	332
Wichert & Gardiner	401	Williams, W. W.	340
Wick, H. K., & Co.....	387	Willson, J. R.	322
Wickford & Snapp	387	Wilson, C. C.	332
Wickham, Chapman & Co	280	Wilson, D. J.	332
Wickson, G. C., & Co	306	Wilson, Edgar.....	340
Widdicomb, John, Co	393	Wilson, Fred.....	392
Wiggins' Sons, W. G.	399	Wilson, F. J.	388
Wilcox, Harriet E.....	396	Wilson, J. H.	322
Wilcox, Olive.....	396	Wilson, James	322
Wilcox, S.	332	Wilson, John A	322
Wilcox, W. A.	348	Wilson, J. S.	340
Wiles, Irving R	254	Wilson, Mrs. L. L. W.	237
Wild, Edwin O.....	276	Wilson, Lillian B.	400
Wilder Manufacturing Co	306	Wilson, W.	388
Wiley, J., & Son	276, 387	Winans, Walter	406
Wilgus, William J.....	301	Windsor Lead and Zinc Co.....	388
Wilkins, George S.....	295	Wing, J. & W. R.	348
Wilkins, W. A.	404	Wing, Joseph E	322, 332
Wilkins, William E	276	Wingo, B. A.	332
Wilkinson & Co	282	Wingo, J. W.	322
Wilkinson Coal and Coke Co.....	387	Winkle, G. W.	351

	Page		Page.
Winkley, F. D.	282	Woody, William	388
Winn, Charles G	340	Woollacott, H. J	353
Winslow Brothers Co.. 391, 392, 406, 410		Woolman, A. J.	348
Winslow, J. H.	388	Worcester Corset Co.	413
Winsor, Mulford	388	Work Mining and Milling Co	388
Wirt, Charles, & Co.	289	World's Maritime News Co	277
Wirth & Hulings.	388	Wormser Filter Plate Co.	388
Wise, A.	388	Worth Brothers & Co.	301
Wise, Leo, & Co	277	Worthington, C. T.	332
Wisser, John P.	277	Worthington Pumping Engine Co.	284
Withers, J. B.	332	Wrey, W. B.	340
Withersbers, Sherman & Co.	388	Wright, Charles	340
Withington & Cooley Manufacturing Co.	305	Wright, E. H.	322
Wohler, C.	388	Wright, Harrison.	332
Woldert Grocery Co.	340	Wright, Henry L.	304
Wolf, Henry	257, 258	Wright, J. D.	388
Wolfrum, J. G.	322	Wright, Robert	322
Womack, T. A.	332	Wright, Simeon	332
Woman's Board of Home Missions	277	Wright, Thomas	340
Woman's Board of Foreign Missions	277	Wright, W. H.	332
Woman's Medical Journal	277	Wright & Ditson	407
Women's Christian Association Philadelphia	277	Wrought Iron Bridge Co.	295
Wonderly, Mrs. A	277	Wuerpel, Edmund H.	254
Wonson, William H., & Son.	351	Wuertz, E.	406
Wood, A.	340	Wyant, A. H.	254
Wood, C. A.	340	Wyatt, J. T.	388
Wood, C. B.	340	Wyckoff, Seamans & Benedict ...	265
Wood, H., & Brothers	388	Wyoming engineering department	388
Wood, H. E.	388	Wythe Zinc and Lead Co	388
Wood, Henry E.	388	Xander, Christian	353, 354
Wood, Lovett M.	277	X-Ray Mining Co	388
Wood, R. D., & Co.	293	Yale Medical School.	277
Wood, T. S.	388	Yale University	240
Wood, T. W., & Sons.	322	Yale & Towne Manufacturing Co.	391
Wood, Walter A., Mowing and Reaping Machine Co	305, 410	Yandell, Enid.	260
Wood, William & Co	277	Yankee Girl Mining Co.	388
Woodbury, Charles H.	254	Yard, E. J.	301
Woodbury, Marcia O	254	Yates, C. L.	277
Woodhull, S. D.	388	Yater, J.	322
Woodmen of the World	414	Yellow Jacket Mining Co	388
Woodrome, B. C.	340	Yerington, J. A.	388
Woods Investment Co	388	Yesbera Manufacturing Co	265
Woodside, L. B.	340	Yohn, F. C.	255
Woodside Patent Calf Manufacturing Co.	403	Yost, John.	388
Woodward & Jaques.	340	Yost Writing Machine Co.	265
Woodward Iron Co.	388	Young, A. P.	322
Woodward, T. R.	277	Young, B. H.	388
		Young, B. M.	340
		Young, C. W.	388
		Young, Grace	396
		Young, Mrs. J.	388
		Young, Rufus	322
		Young William A.	340

	Page.		Page.
Young & Robinson	406	Zanesville Stoneware Co	388
Young Churchman Co	277	Zeller, W. N	322
Young Men's Christian Association	416	Zenobia Mining Co	388
Young Women's Christian Associa-		Zeublin, Henrietta C.	396
tion	416	Zettle, Josephine E.	396
Youngstown Bridge Co	295	Zeigler, Jacob	332
Yowell, P. J	322	Zimmerman Brothers	351
Yreka Journal Publishing Co.	388	Zimmerman, Silverton	388
Yunker, P. N	322	Zindars & Hunt	289
Zadig, S. F., & Co.	388	Zogbaum, Rufus F.	255
Zallee, John	392	Zuni Mining Co	388



